Textile World

VOL. 84, NO. 12—ESTABLISHED 1868

CONTENTS NOVEMBER 1934

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MANAGEMENT

Eventually—Why Not Now?..... 55
The Editor Says..... 56
Letters to the Editor..... 57
Cotton Manufacturers, North and South, Meet Heart-to-Heart 58
NRA Reorganization—What It Means to Industry..... 60
Stretch-Out Control Must Be Flexible..... 61
Work Assignment Regulations Specified by President..... 63
Annual Meeting of U. S. Research Institute..... 64

MERCHANDISING

Sales Alertness Best Weapon Against Unemployment..... 63
Crispness in French Fabrics Achieved by Lamé, Cellophane, etc. 87

MATERIALS

World Consumption of American Cotton Threatened..... 72
Pyroxylin Coated Fabrics—Making Nitrocellulose Solution.. 80

MEN

Meeting of Textile School Heads..... 57
Employee Relations Platform..... 59
Textile Novels—Strike in France, Crash in Lancashire..... 66
Strike Aftermath—What Workers Think About It All..... 67
The Personal Page..... 100

MILL ENGINEERING

Dyehouse Fog Can Be Eliminated at Low Cost..... 68
Coal or Oil—Which Is Correct Fuel?..... 84
New Machinery and Processes..... 102

METHODS

Short Cut to Twist—Turns per Inch by New Method..... 65
D-13 Favors "S-Z Twist"; Wool Group Votes for "Typp"... 70
Cotton on Wool Looms—All-Cotton Fabric and Mixture.... 73
Narrow Fabric Weaves—Survey of Types for Designer..... 74
Rayon Warp Sizing—Means to Aid Succeeding Processes.... 76
Pretreatment of Yarn for Unshrinkable Knit Goods..... 78
Loom Thread Separators Reduce Fabric Defects..... 79
Release of Kinks from F. F. Sinkers Must Be Even..... 82
The Consumer Wonders How to Judge Wool Fabrics..... 86
British Accept Anti-Run Hosiery of Distinctive Stitch..... 88

DEPARTMENTS

Kinks and Wrinkles 96
Personal Page 100
The Textile Calendar 100
Questions and Answers 98
New Machinery and Processes 102
New Publications and Business News 105
TEXTILE WORLD Analyst 95
Quotations 120

INDUSTRY BRANCHES

Cotton Digest 106
Wool Digest 108
Rayon Digest 110
Silk Digest 112
Knitting Digest 114
Processing Digest 116
Engineering Digest 117
Industry-Wide Events 101

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Textile World

November, 1934

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Editor: DOUGLAS G. WOOLF

Eventually—Why Not Now?

LAST December, in these columns, we recommended to the textile industry the creation of an American Textile Institute, representative of all branches and consolidating the medley of trade associations which are now serving this field.

We solicited and received from a large number of leaders in the field their reactions to this idea. One-third of the men heard from were definitely in favor, one-third were just as definitely opposed, and one-third were doubtful, but mostly in favor of an intermediate step as a compromise. In both the first and second groups there were some men who, while either favoring or opposing the suggestion, inclined toward such a compromise.

The alternate plan proposed by a very considerable proportion of our correspondents was the formation of a national council composed of representatives of the various existing associations, rather than the establishment of a national institute which would supersede those organizations. This council, it was held, could consider those problems common to all branches of the industry, and attempt to develop a unanimity of thought on them.

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Since that time, an event—the general textile strike—has demonstrated dramatically the need for some such organization.

A correspondent, whose letter we printed last month, expressed this thought as follows: "Can you imagine how much different the situation would be today in the present handling of the strike for instance, if through such an Institute the whole textile trade could face this situation together?"

Instead, what was the industry's status? Several distinct associations and code authorities, representing apparently unrelated groups, were forced to battle for the rights of their respective industries. There was no common medium through which the manufacturers' side could be presented to the public, the employees, and the Government.

On the other hand, the United Textile Workers of America, while not actually representative of textile workers, was able to pose—and did so successfully—as a united front on the other side.

In the settlement of the strike, an equally serious situation arose. For example, certain branches of the industry found themselves saddled with provisions for handling the stretch-out problem, despite the fact that practically all the experimentation and study leading up to those provisions had been centered in one division alone: cotton.

In fact, there was a disposition on the part of the press and the public, throughout the strike and its settlement, to set up the Cotton-Textile Institute as the spokesman for the textile industry. This "honor" was unsought by that body; in fact, was undoubtedly embarrassing to it. Equally, it was not satisfactory to the other groups which naturally had no representation there.

The answer is obvious: A council, such as that mentioned above, could have served as a clearing-house through which the needs of the various groups might have been brought into proper relationship, and the united thinking of a great basic industry presented to the public.

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This is just one instance of the need for some type of centralization. We cited previously in these columns seven major advantages of an American Textile Institute: Centralized statistical agency; avoidance of conflict over jurisdiction; centralized research organization; opportunity for broad educational activities among operating executives; centralized mouthpiece for transmission of industry's aims to general public; development of greater mental flexibility in the individual; and increased return for associational expenditures.

Consequently we recommend again to the industry the formation, first, of a national council which, we hope, would lead eventually to a more closely knit organization. We urge that this council idea be taken up for action at the next ensuing meeting of each major textile association.

We repeat:

Eventually—why not now?

The Editor Says:

ANOTHER synthetic strike appears to be in the making in the textile industry. That is not a pleasant fact, but it must be faced.

The creator is, as before, Francis Gorman. He has started to hand out the same scare-stuff which he fed to the public for months prior to the recent general textile strike. He is now "fearful" that a new crisis impends.

It's the old game of reporting tremendous pressure from the workers for a strike call. Gorman started to sound this note last March. When the strike finally was called in September, the "pressure" from workers was so great that the union had to ship truck-loads of men around the country to force employees away from their jobs. An example of this "pressure" was the city of Greenville, S. C., where 95% of the workers wanted to stay at their jobs, but were prevented by flying squadrons from Spartanburg.

And only a month after the end of the strike which brought suffering without compensation to hundreds of thousands of textile workers, Gorman was at it again, warning that thousands of southern workers were "pressing" for a strike.

But let's be fair to Gorman. His behavior is not so insane as it may appear. It really can be explained. At the end of the strike, Gorman made a lot of conversation about a union "victory" which actually didn't exist. He is now pointing toward the next clash, when he may again capitalize the workers' sufferings for gains in union memberships. That, too, is understandable, even though tragic; it is Gorman's job to get memberships no matter what happens to the workers themselves.

Every textile manufacturer knows that there is no "pressure" from the workers for a strike. The employees in the very section from which Gorman reported strike "pressure" —the South—are today the most resentful against the union tactics in the recent strike. Union memberships and support have fallen off at a spectacular rate in that section since the strike, according to information which we have from a wide area.

Let us be understood. Even though the U. T. W. has sanctioned strikes in individual mills, the next general textile strike is not necessarily imminent. Gorman plans months ahead. But manufacturers should inform their employees and the public of his tactics now, so that he will be given less credence during the next artificial strike than he received during the September engagement.

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Typically Gormanesque

IT'S too bad that business can't be improved merely by adroit maneuvers and tricky statements. If it could, Francis Gorman would win the war against depression in no time at all.

The latest example of his eel-like movements was his letter to George Sloan suggesting the creation of "employer-union machinery for the expansion and extension of the textile market."

On the face of it, and particularly to the general public which does not know the Gorman background, this sounds pretty noble. An uninformed observer might pre-judge the case by deciding that a refusal of Mr. Gorman's kind offer would indict the manufacturers as non-cooperative.

But, actually, what is that all about? Simply a cute play by Gorman to wangle recognition for a union which represents only a small minority of textile employees. If he can force the industry to express even the most casual and perfunctory interest in his proposition, he will immediately "sell" this to prospective members as evidence that the U. T. W. represents textile labor.

His insincerity is evident in almost every sentence of his letter. He offers his suggestion as the "sincere expression" of nearly 400,000 organized textile workers, whereas advice from the A. F. of L. convention in California revealed that the U. T. W. had 38,700 paid members! He starts his letter with the phrase "*when* wage readjustments have been made, as the result of inquiries now being made by the U. S. Bureau of Labor Statistics and the Federal Trade Commission"; the italics are ours—Gorman assumes without justification that such readjustments will be made. He refers in his slick way to "our long-standing proposal for cooperation in the field of industrial relations," whereas actually there has never been anything but destructive tactics on the part of the U. T. W.

But what's the use of going on? No matter what Gorman does or says now, how can a self-respecting industry even consider cooperation with a man who has disregarded all standards of human decency as did Gorman in the recent strike?

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"Stop Beating Your Wife!"

THE statement of the National Textile Labor Relations Board ordering the textile industry to stop discriminating against former strikers, is an amazing one.

The board was designated to act in a judicial capacity in connection with this problem. Blanket statements implying the wholesale existence of such discrimination are not compatible with the board's function.

The action is taken because, six weeks after the end of the strike, the board was "still receiving numerous complaints." Are the board members as naïve as that? They should know that they will continue to receive complaints as long as the U. T. W. can buy postage stamps or pay its phone-bills.

The industry is anxious to cooperate with the board. Such actions, however, make cooperation difficult.

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And How!

WE really don't feel in a particularly critical mood this month, but there are a lot of things that just seem to arouse a negative reaction. One of these is the Federal Trade Commission's textile questionnaire seeking information as to labor costs, profits and investments, to determine whether wage increases can be sustained.

We have a copy before us.

It makes us feel a little sick.

We can't blame the Commission; it is under executive orders, as a result of the Winant report.

But we can't help speculating a bit. Thousands of textile manufacturers must spend hours each, answering questions on the most intimate details of their business life, in order to determine an answer which is already known by authorities in the industry. Furthermore, this is all because a labor union forced a strike upon the workers, forced them to remain away from their jobs, and wangled a settlement out of the Government which, though actually a defeat, had a certain amount of nuisance value which the union promptly labeled as victory.

And this F. T. C. questionnaire is part of the nuisance.

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It Must Be Good!

BUT there is at least one bright spot. The two major cotton manufacturing associations got together and adopted an industrial relations platform. Naturally, it appeals to us, because just last month we said in these columns: "We recommend to the several branches of the industry that their associations be encouraged—in fact, ordered—to devote the major part of their effort during the next year to the development of open forums on the broad subject of employer-employee relationships."

The cotton division has taken a big step in that direction.

The platform itself will ring the bell with any fair-minded persons. That was our reaction when we first read it and this opinion was clinched when we heard Francis Gorman damn the platform in a radio address the following night.

To The Editor:

EDITOR, TEXTILE WORLD:

I note with interest the editorial in the TEXTILE WORLD of September, 1934. In regard to the statement "the flying squadron, an innovation in industrial warfare," the only thing new in the flying squadron is the fact that automobiles are now used.

Flying Squadron Not New

The flying squadron or mobbed picketing has been used for years by the United Mine Workers, the principal union of the A.F. of L. It was used before the days of the automobile, and then later has been improved (?) by the use of automobiles, trucks and machine guns.

MANUFACTURER.

Comments on Stretch-out Editorial

I have read over carefully the editorial on stretch-out in the October issue. It seems to me to give a fair and impartial presentation of the stretch-out problem, and should help to set a good many people right in their thinking on the matter.—**R. E. Loper,** president, Ralph E. Loper Co., Fall River, Mass.

I have read with interest editorial in the October issue of TEXTILE WORLD, and am very glad that you are publishing it.

What I cannot understand is why the textile industry should have been singled out when, as a matter of fact, it is probably the lightest of all the industrial occupations and one in which practically continuous employment is the rare exception instead of the rule, as is the case with many industries.—**J. E. Sirrine,** J. E. Sirrine & Co., Greenville, S. C.

I like your editorial, on the assignment of work in cotton mills, and I hope it will correct some of the false impressions which seem to exist.

The term "stretch-out" is unfortunate, as you say, because it suggests some kind of torture to workers. Now, it is too often associated with any improvement that the mills may attempt to make and it will take a long time to overcome the bad effects of such publicity.—**C. P. Wood,** Lockwood Greene Engineers, Inc., New York.

I think you have handled this subject in an admirable way and I am of the opinion that if articles of this kind can be given full publicity, the resistance to the stretch-out system will disappear.

Of course everyone understands the unions' reason for fighting the stretch-out system; however, their efforts cannot succeed since they are not dealing with facts.

I have noticed several articles in our local papers, by the Georgia manufacturers, on this subject which are helping a whole lot to clear up the misunderstanding that exists with reference to this matter.—**J. M. Shelton,** vice-president, Robert & Co., Inc., Atlanta.

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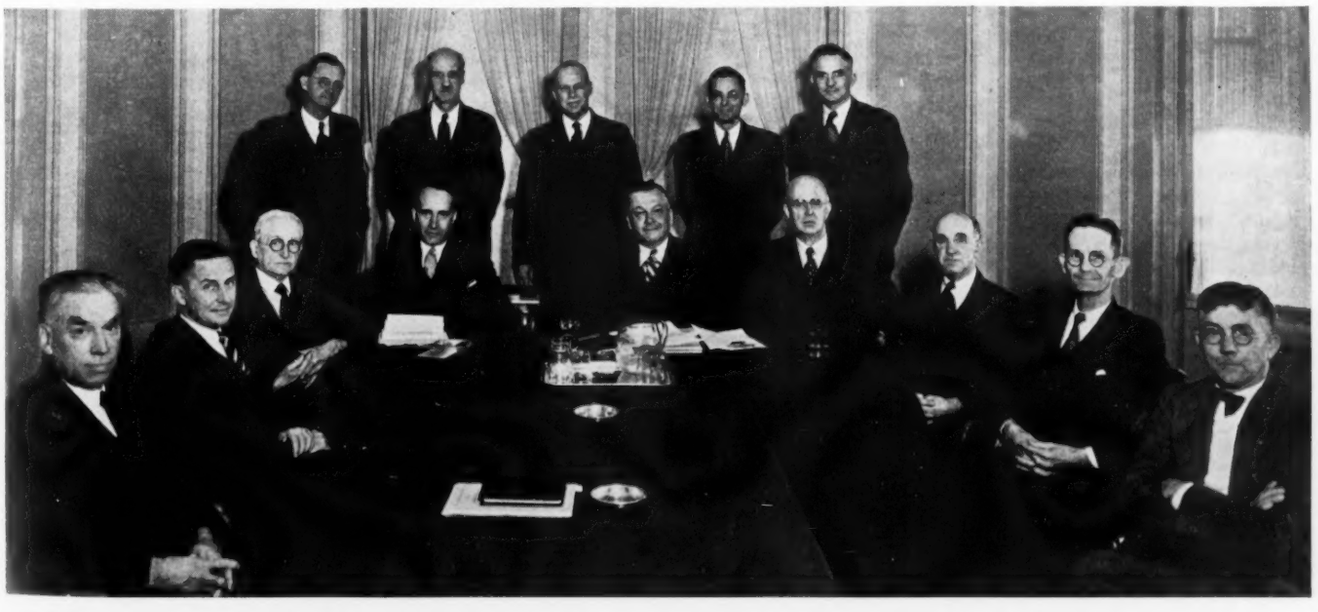
Assorted Flowers

I have just had an opportunity to read your editorials in the October issue and think that you are doing a magnificent editorial job. I am glad to see some one who is willing to bluntly and straightforwardly present the facts.—**Ernest C. Morse,** manager, Cooperative Merchandising Dept., American Bemberg Corp., New York.

I have been intending to write you to extend my congratulations on the splendid editorial in your issue of September, on "Textile Workers against United Textile Workers." It was a very sane and constructive piece of writing. —**Luther H. Hodges,** manager, Carolina Cotton & Woolen Mills Co., Spray, N. C.

I wish to thank you very sincerely for your splendid editorial on the subject of lead-weighted silk. It was a delight to note the forceful manner in which you handled this controversial matter.—**Pauline Beery Mack,** Pennsylvania State College.

Again you have done a very nice thing for Committee D-13 by giving such publicity to your editorial in the October issue regarding our work. As chairman I thank you for it and I am planning to say something about it at the New York meeting.—**Herbert J. Ball,** chairman, Committee D-13, A. S. T. M.



Ensemble of Textile Educators—*Deans of American textile schools at meeting held recently in Atlantic City, N. J. Meeting was sponsored by Textile Foundation. F. M. Feiker, who recently made a survey on textile education for the Foundation, presided. Franklin W. Hobbs, chairman of the Foundation, attended, as did Edward T. Pickard, secretary. Seated, left to right: Charles H. Eames, Lowell, Mass.; Carl D. Brandt, Lubbock, Tex.; E. W. France, Philadelphia; E. T. Pickard, Washington; F. M. Feiker, Washington; Franklin W. Hobbs, Boston; William A. Goss, Fall River, Mass.; E. W. Camp, Auburn, Ala.; C. A. Jones, Atlanta, Ga. Standing, left to right: J. B. Bagley, College Station, Tex.; Thomas Nelson, Raleigh, N. C.; J. H. Hanford, New Bedford, Mass.; William D. Fales, Providence, R. I.; H. H. Willis, Clemson College, S. C.*

Behind Closed Doors

Cotton manufacturers, north and south have heart-to-heart discussions

COTTON manufacturers gathered together in two important meetings last month: the American Cotton Manufacturers Association at Greenville, S. C., Oct. 17, and the National Association of Cotton Manufacturers at Boston, Oct. 25. These were not ballyhoo conventions but heart-to-heart discussions, behind closed doors, of the many problems facing the industry.

A. C. M. A. at Greenville

THERE WAS both a negative and a positive side to the A.C.M.A. meeting at Greenville. The negative side was forced onto the association by a daily newspaper report reflecting wide dissension among the members on the subjects of the code, the Cotton-Textile Institute, the handling of the strike, etc.

Consequently, one of the resolutions reaffirmed the association's whole-hearted support of the Institute and of George Sloan, and specifically denounced the newspaper story as "unfounded and untrue."

On the positive side, the meeting afforded an opportunity for the discussion of current problems. Members of the code authority and of the special committees of the authority which have been in recent touch with Washington, explained to those present the more recent developments in connection with the code. Over 300 mill executives, representing approximately 14,500,000 spindles, attended.

Resolutions adopted by the meeting included:

1. Opposition to the processing tax on cotton. "If the relief of the cotton farmers requires the payment of a bounty," it read, "the necessary funds should come from the national treasury."

2. Warning that "it would be extremely unwise and contrary to the interests of agriculture, labor, industry, the public, and recovery, for any change to be made in the present provisions of the code covering the maximum hours of labor and the machine hour limitations."

3. Protest against "the ever-increasing encroachment of the national Government in the field of business and especially in the cotton textile industry"; and against governmental activities "as will tend to set aside the right of self-government provided for in the code, and to substitute federal regulation therefor."

4. Protest against the "recent evidence of mob rule and violence as represented by organized flying squadrons."

5. Plea that, in negotiating agreements with the several foreign countries the Administration so arrange these agreements to the end that there be no further loss of exports of cotton piece goods, and that the export market for cotton piece goods be regained.

N. A. C. M. at Boston

ADOPTION OF a platform of principles of industrial relations and a strong stand against removal of the restrictions on hours of machine operation marked the annual meeting of the National Association of Cotton Manufacturers, held in Boston, Oct. 25, attended by 125 members, at which Ernest N. Hood, was re-elected president for a third term, a new record.

The platform itself, after mild discussion, was adopted unanimously, as the A.C.M.A. had previously done, and represented the greatest unanimity of opinion that has ever been expressed, in the opinion of one of the leaders of the New England group. Further, the N.A.C.M. passed a resolution inviting all other industries to adopt the same or similar platforms. Sections five and ten of the platform aroused most interest at the closed meeting.

Another important step taken at the meeting was the setting up of a "policy committee" of seven members. This committee, which takes the place of the emergency committee set up during the strike, will be able to move much faster than the entire membership in presenting to the public the views of New England manufacturers, without, of course, trespassing upon the Cotton-Textile Institute's position as spokesman for the industry as a whole. The committee has, as one of its aims, cooperation with a similar committee which will probably be set up by the A.C.M.A.

The resolution concerning machine-hour limitation, after a strong preamble, called upon the NRA to continue the limitation of operating hours of productive machinery in the interests of both labor and management.

At the afternoon meeting, the following officers and directors were elected: president, Ernest N. Hood, treasurer of Pequot Mills; vice-presidents, Dexter Stevens, general manager of Esmond Mills, and Henry G. Nichols, president of Otis Co.; directors for three years, L. V. Dodge of Berkshire Fine Spinning Associates, Weston Howland of Warwick Mills, Brackett Parsons of Pepperell Mfg. Co., Frank I. Neild of Neild Mfg. Corp., and E. Martin Philippi of the American Thread Co.

Russell T. Fisher, secretary of the association, called attention in his report to the need for solidarity on the part

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WE ARE surprised that it was regarded as news, last month, that there was wide difference of opinion among cotton manufacturers concerning the code, and also concerning the method in which the recent strike was conducted. It would be news if such difference of opinion didn't exist.

For just as long as we have been wandering around this country as a textile editor, we have sat in on endless discussions of this sort. In the lobby sessions of a convention, for example, you can pick up almost any point of view, if you have time enough to search for it.

Since the Cotton-Textile Institute was started, we have heard all sorts of arguments about the way it has been managed. Since the cotton textile code was adopted, we have witnessed particularly violent debates concerning it. During and after the recent strike, we collected dozens of opinions as to just what should have been done that wasn't done.

All of this "dissension" is quite normal. Its absence would be abnormal; it would make us fear for the state of the nation.

The real question is: What does the majority think? We happen to know that the majority of cotton manufacturers still endorse the Cotton-Textile Institute and its president, and still want to retain the cotton textile code. Against this knowledge, a stray newspaper report to the contrary seems something not quite worth worrying about.—EDITOR.

of manufacturers, particularly in view of the multiplicity of problems which will present themselves in the future. Mr. Fisher was emphatic in warning of the danger of Japanese competition in our domestic and foreign markets.

The cotton committee brought in a fighting report condemning the AAA for its attempt to impose a code covering all transactions of raw cotton from farmer to mill, since the plan, although allowing the continuance of the "New England Arbitration Board and Board of Appeal," would scrap the "New England Terms for Buying and Selling American Cotton," which have been in effect for 23 years. The association subsequently resolved to register its disapproval of the attempts of the AAA to force the raw cotton code on the industry.

Industrial Relations Platform

IN THE belief that "understanding is necessary to cooperation between employers and employees to the mutual benefit of both and to the best interests of the public, and that a clear and concise statement will further this purpose," the cotton textile industry as represented by the A.C.M.A. and N.A.C.M. has adopted the following platform of principles:

1. Neither membership nor non-membership in a labor organization shall interfere with a man's free right to work.

2. Employees have the right of membership or non-membership in any labor organizations—a voluntary choice under the provisions of the NIRA.

3. The laws of the land should not be altered by force or edict. The industrial codes, now law, should be changed only by the definitely prescribed and orderly procedure now available and no other method should be recognized. Changes in these industrial codes by administrative edict transform a voluntary system of self-government into a compulsory system governed by authority outside of that industry. If change can be made at will by administrative edict in one term of a code, then change can likewise be made in all others—not alone for the cotton textile industry, but for all industries.

4. The right of a man or woman to continue at his or her occupation is as fundamental as the right to strike. The employee's right to continue the occupation of his or her choice should not be jeopardized through intimidation, coercion by force, or other illegal means, either while at work or at home. Employees in exercising their choice are guaranteed freedom from coercion on the part of employers; they should be given the same guaranty from coercion from other sources.

5. Minority groups of employees should have the right to negotiate with their employers and any provision that a majority group must be the sole spokesman for all would be unsound, untenable, and contrary to the American theory of government.

6. The cotton textile industry, if it is to survive, must avail itself of the developments of science and invention. The application and operation of these developments depend on varying conditions requiring various programs of operation in individual mills.

7. Strikes or lock-outs should be illegal when they are designed to coerce the Government, either directly or indirectly, by inflicting hardship on the community.

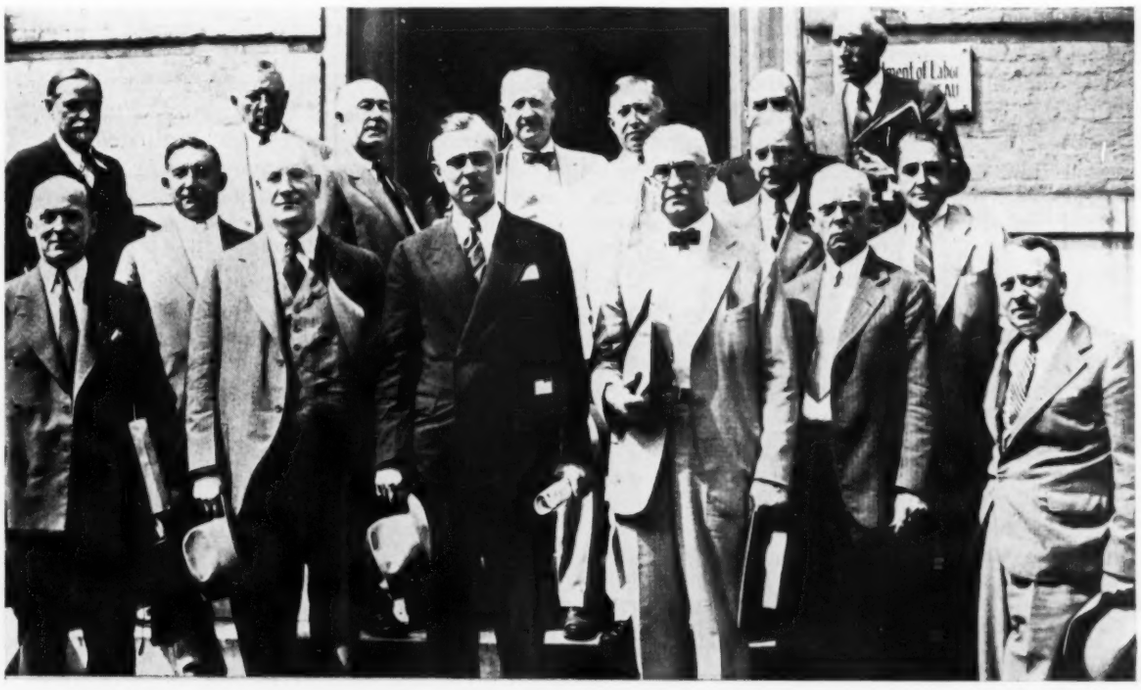
8. Representatives of organized employees should have definite legal responsibility and be required, as is required of industry, to render proper financial statements, thus being accountable to the public in their stewardship.

9. The Government should clearly define its policy in the granting of relief to people who voluntarily abandon their employment. Granting of relief, due either to a policy or a lack of policy, should not be used to start or maintain strikes. No one can question relief given to large numbers who have been thrown out of work involuntarily by the strike of a few.

10. The duty of management to conduct the business for which it is responsible, should not be obstructed by forcing a surrender of its proper function to the Government or to employee organizations. Otherwise, industry is deprived of that confidence which is absolutely necessary before a return to a more normal prosperity is possible.

NATIONAL ASSOCIATION OF COTTON MANUFACTURERS
by Ernest N. Hood, *President*

AMERICAN COTTON MANUFACTURERS ASSOCIATION
by William D. Anderson, *President*



International News

Group of cotton textile executives photographed recently during one of the industry's many pilgrimages to Washington. The center trio are Ernest N. Hood, president of the N.A.C.M., George A. Sloan, president of the Cotton-Textile Institute and W. D. Anderson, president of A.C.M.A.

NRA Reorganization

What it means to industry

Underwood & Underwood

Here is the new National Industrial Recovery Board. At the head of the table sits S. Clay Williams, chairman. Others (from left to right) are W. H. Hamilton, Leon Henderson, Blackwell Smith, Arthur D. Whiteside, L. C. Marshall, S. Hillman.

THE reorganization of NRA will have as its keynote an essentially tailor-made application to the varied industries of the country. The days of "mass production of codes," of "blanketing under the Blue Eagle," of sweeping decisions on the vastly complicated problems of pricing, of just one firm ruling about labor relations and the methods of collective bargaining, are over. So are the equally haphazard "experiments" of setting up different ideas and plans in branches of even the same industries "to see which works out best." Starting with the problem of compliance, of code enforcement, the work of the new administrative board will work back by eliminating the palpably unenforceable provisions of codes and into a careful study of the needs and capabilities of industry after industry in order to correct the faults that have developed, and of organizing the code setup along logical, helpful lines.

To do this job, the President appointed the new National Industrial Recovery Board of seven men to take the place of General Johnson and to do all the varied things that he did—or had left to him rather from previous shearings of his authority and power. Over this, so far as long-term policy goes, sits the Industrial Emergency Committee, with authority over general policies insofar as broad decisions made by the new administrative board might touch on the bigger work of the NEC, which is to formulate the legislation for the "permanent NRA." Its very formation and the powers it has answer any doubts that may have been current that NRA would be continued.

The NIRB, the new administrative agency, is headed by S. Clay Williams, of the Reynolds Tobacco Co., who is chairman, also, of Secretary Roper's Business Advisory and Planning Council; he is recognized as a fine representative of industry. A. D. Whiteside, president of Dun & Bradstreet, is one of the country's ablest experts on distribution, and was one of the first division administrators of NRA. Walton H. Hamilton, Yale professor of law, has been associated with NRA, is recognized as one of the fairest students and judges of complicated NRA problems; he is by no means hard to take for industry, although he is listed roughly as the "impartial" member of the NIRB.

The two "labor" members are Leon C. Marshall of Johns Hopkins and Sidney Hillman of the Amalgamated Clothing Workers. Marshall was a member of the old National Labor Board, is a labor specialist; but the A.F. of L. has misgivings about him, as he is suspected of seeing some possible good in company unions. Hillman is one of the ablest labor leaders in the country and has been a member of the Labor Advisory Board of NRA; his union was long an "outlaw," joined the A.F. of L. only last year, and has been known for its close cooperation with the employers of its industry. Leon Henderson, able and friendly director of Research and Planning of NRA, and Blackwell Smith, legal adviser, are ex-officio members of the NIRB, and make seven men to do the job of General Johnson.

The Industrial Emergency Committee is made up of Donald Richberg as director, Secretary of the Interior Ickes, Secretary of Labor Perkins, Director Harry Hopkins of the emergency relief, Administrator Chester C. Davis of AAA, and S. Clay Williams as NIRB chairman.

The significance of the new set-up for industry therefore, for the present at least, centers around the Clay Williams Board. This group found waiting for it a tremendous amount of fundamental data and administrative changes well organized and evaluated.

Certain specific problems are clear already. Compliance is a major issue, must be met and solved quickly. The industries themselves are going to be asked to take more and more of the disciplinary duties. The compliance division of NRA would like to be able to investigate plants and books of all companies in order to unearth violations; they suspect that industry may not like the idea, however! The penalties of non-compliance are very stringent in fines and imprisonments, but few have yet been assessed. The plan to rearrange compliance machinery leads both to revisions of the penalty provisions so that judges will impose them and not regard them as oppressive, and to the elimination of unenforceable provisions of the codes.

Among the latter are the pricing provisions. Mr. Richberg, speaking and writing, has brought the pricing issue clearly into the open; it has been simmering inside NRA for months. There is no question that price fixing will be eliminated, but code by code and not with one sweeping order, it is now indicated.

But, again, industry has little to fear from the new set-up, at least until the plans for revamping NRA for the permanent set-up get under way, and little will be revealed of that probably before January, when Congress meets. Meanwhile, however, NRA is in friendly hands.

Stretch-Out Control

By E. D. Fowle

Must be made extremely flexible

THE stretch-out system began with the mechanical revolution. When Hargreaves' spinning jenny made its appearance in 1764, a spinner operated eight spindles with no more work than he formerly expended in operating one. The spinners of the time were afraid of the stretch-out system, and they broke into Hargreaves' workshop and destroyed his machine. But the machine was rebuilt, duplicates were made, and improvements were introduced from time to time. Within a period of a few years, the number of spindles which could be and were assigned to each spinner was gradually increased to more than 100.

Suppose that in 1764, as the result of a Winant Report, a Textile Work-Assignment Control Board had been set up and that the board had ruled that the number of spindles assigned to any one worker must be limited to one. The principle would very likely have then been applied to all industry and the progress of at least our material civilization would have stopped right then and there.

Suppose instead that the Work-Assignment Board had been blessed with rare perspicacity and had said: "We see that this technological progress is destined to benefit mankind. We see that it will lead to lower costs of manufacture and hence will permit more people to use and enjoy the products of industry. We see that the demand for less costly products will require their production in greater quantity and that demand for workers will not shrink in inverse proportion to the productivity per worker. We see that the reduction which technological progress will make in the amount of money which must be spent for textiles and other basic commodities will lead to a demand for other less essential commodities, with the result that industries supplying the latter will be expanded and will require more workers. It is clear that new industries, many now undreamed of, will seed and flourish as the old industries begin to tax the consumer less and less. Therefore we shall in no wise limit the productivity per worker per unit of time except to an amount which does not cause undue fatigue under the working conditions which exist in any given case."

It is to be hoped that the Work-Assignment Control Boards now being created will adopt the same resolution. Such boards will then have only one responsibility—namely, to see to it that no application of the stretch-out places an unreasonable or unfair burden on the employee.

No one can deny that to establish and maintain a flexible control of the stretch-out would be a heavy undertaking; but if the stretch-out is to be controlled at all, it cannot be done in a simple, inflexible manner. To set a rigid, arbitrary, and blanket figure for the number of machines which can be assigned to an operative would bring technological progress to all but a complete halt, largely nullify—both directly and indirectly—any further benefits to be derived from the achievements of our scientists and engineers, hinder further rise in the standard of living of employee and employer alike, and thus rapidly decelerate the growth of our civilization. In addition it would increase the vulnerability of this country to foreign competition.

A blanket machine assignment, unless placed at so high a figure that it would in the case of most mills be no control at all, would penalize the efficient and low-cost mill to the benefit of the inefficient and high-cost mill. A high-cost industry is obliged to offer a high-priced product—and must resign itself to a market correspondingly small. In addition to penalizing the efficient, well-equipped mill, the blanket figure might well be considered by labor as penalizing the workers in the inefficient mill, who could, so far as the regulation is concerned, be given a heavier burden of work than the machinery, raw-stock quality, labor specialization, and other factors justified.

Flexibility is important also in connection with another matter. Certain individuals have expressed the opinion that the machine load should be increased only where, due to the installation of more automatic machinery or to other improvements, such increase would not enlarge the work load on the operator. This means that those mills which in the past have not assigned as much work to an operative as they are fully justified in assigning on both economic and social grounds, may never—at least so long as the control is in force—bring their work assignment up to that which has been considered fair and proper in the case of those mills already a step ahead of them. Therefore such mills must always lag behind those who have been more progressive, no matter whether they may be fully as progressive in the future. The answer to this problem is that, if a control is to be established, the first step must be one of determining what amount of effort may be fairly and properly expected of a worker. Then the number of machines which a worker has operated in the past need have no bearing on the number to be assigned to him in the future.

There are very few men today who want to see labor sweated. The social wrong has long been recognized. The economic fallacy is now far more generally understood. But those who see any danger to labor in a flexibility of the stretch-out control should remember that there is always in effect a certain amount of natural or economic control. In other words, when more work than an employee can handle efficiently is assigned to him, the mill suffers a loss in production or quality, or both, and hence finds it desirable and indeed necessary to reduce the assignment. Economic laws often take effect slowly, but they do take effect.

Indeed it must be remembered that, although the machine assignment has been on the increase ever since the very beginning of the mechanical revolution, labor is sweated far less today than it was a hundred years ago. We have already indicated that the first influence serving to extend machine assignment was the development of more automatic machinery, relieving the worker of much muscular and mental strain. This influence has always been with us and is perhaps still the strongest. The very existence of the machine-building industries as we know them today depends largely on this influence taking effect; and to kill the effect would be a severe blow to the durable-goods industries—upon whose improvement our national recovery at present mainly depends.

The second influence has arisen largely within the last twenty years, when the principles of scientific management have received appreciable recognition. Such management has taken into consideration that it is unsound to overburden the employees with work, but it has shown two ways in which it is possible to increase machine assignments without bringing about that effect. First, it has demonstrated that a worker's job can be minutely studied and ways found to simplify it and reduce the effort required. Second, it has shown that a job can be broken down into skilled and unskilled tasks, so that with the latter assigned to an unskilled worker the skilled worker can easily attend to more machines.

Other influences, possibly properly a part of scientific management, include the discoveries that better lighting, better ventilating, and better humidifying lighten the employees' work; that increased expense in the purchase of better raw material often more than pays for itself by permitting an increase in machine assignment; that more money spent in early preparatory processes likewise pays; and so on.

These facts show that the number of machines per worker is not in itself a fair or proper measure of the work load. On the contrary, a fair and proper work load is the measure by which in any individual case the correct number of machines per worker can be determined.

May I

Install labor-saving equipment?

THE above question has come to the fore in connection with the study of the stretch-out recommended in the Winant report and detailed to Work Assignment Boards by executive order. From various sources has come word that the proposed provisions are being interpreted as automatically preventing the installation of labor-saving equipment—or at least creating a condition which makes such installation unwise.

In the letter reproduced below, we expressed our own interpretation of their purport. Our answer to the question posed in the heading of this article is: Yes.

It should be emphasized that no opinion on this matter can be positive at this writing. The following is merely our best interpretation, within present knowledge.

Dear Mr.——:

This is in answer to your inquiry concerning the effect of the proposed stretch-out or work assignment provisions upon the installation of labor-saving equipment.

As I understand it, your interest in this arises from the fact that you have been advised by a machinery manufacturer that two cotton mills, prospective clients, in turn advised him (the manufacturer) that they were not permitted to install his equipment since it would reduce the man-power required per unit of product.

Actually, there is in force at the present time no regulation which limits the installation of equipment beyond that contained in the original cotton textile code.

That provision, as you undoubtedly know, was to the effect that petition must be made to the code authority by any mill contemplating the installation of additional productive equipment, in this case looms and/or spindles, except for the replacement of a similar number of existing looms or spindles or to bring the operation of existing productive machinery into balance.

What has happened, insofar as the effect of the stretch-out or work assignment provisions on the installation of equipment is concerned, is as follows:

The Winant report recommended, among other things, the following method of control for the so-called stretch-out:

"During the period of suspension provided for above (up to Feb. 1, 1935), the textile work assignments control board may, on petition of any mill planning to install labor-saving machinery, and after a hearing open to representatives of interested employers and employees, authorize the employer to increase labor assignments to the extent only that the amount of work required of the employees affected will be directly reduced by the installation of this machinery."

You will note that the potential effect of this proposed provision was not to prevent the installation of labor-saving equipment but to prevent the extension of the work load upon the individual beyond the amount of the reduction of the work load brought about by the installation of such labor-saving equipment. In other words, the Winant board recognized a principle for which textile manufacturers have always fought, namely, that the basis for measuring stretch-out should not be the number of machines per worker but the amount of effort required per worker.

In addition, to date there has been no machinery set up which would put the above provision into effect. The President has authorized the creation of Work Assignment Boards for the various branches of the industry but these boards have not been created, or at least their personnel has not been announced. I understand that they are being formed and that such announcement may be expected shortly.

Bearing further upon this question is the following extract from an amendment to the cotton textile code, which amendment was approved by the President Oct. 16:

"During this period (up to Feb. 1, 1935) the number of looms, frames or other machines required to be tended by any class of employees shall not be increased where the character of the raw material, yarn, construction of cloth, preparatory processes, *type of equipment used,* or character of finish or put-up, is not changed. Where such changes do occur the number of machines tended by such employees may be increased or decreased in such manner as will not increase the amount of effort required of the worker." (The italics are mine.)

You will note that this reinforces the interpretation which I pointed out above.

It is true that the same amendment to the cotton textile code provides for the possible investigation of work assignments increases arising out of any of the changes mentioned in the above extract. In this connection, the amendment states:

"Prior to Feb. 1, 1935, on petition of any employee or employer affected, or his representative, or on its own motion, the Cotton Textile Work Assignment Board may investigate any work assignment which has been increased since July 1, 1933, at any mill and the mill shall show the reasons for such increase. If, after hearing, the Board finds such assignment requires excessive effort it may require its reduction accordingly."

I believe you will see from the above that, as I stated at the beginning of this letter, there has been nothing done which limits the manufacturer's right to install equipment other than that limitation originally provided for in the code.

Naturally, this does not mean that such limitation may not be put into force in the future. We will all know a lot more about this when the Work Assignment Boards are actually created and actually go to work.

Nevertheless I know from my own contact that the industry is going to make every effort to see that there is preserved the fundamental principle that stretch-out must be measured not by number of machines per worker but by amount of effort per worker. If this principle is regarded carefully, there is no reason why the industry should not continue to be in position to install labor-saving equipment.

DOUGLAS G. WOOLF,
Editor, TEXTILE WORLD.

A Trial Balloon?

ONE day last month the New York *Times* came out with a page-one story reporting that the NRA was to set its face against restriction of production and that no such provisions would be written into codes in the future.

And that started things! All sorts of rumors were spread around, mostly to the effect that such provisions in existing codes would be scrapped. Later, however, George Sloan was advised officially that no such change was contemplated.

But the friends of machine hour limitation are still jittery, and the foes are still hopeful.

From best indications, this story was a "trial balloon." Personally, we think it quite possible that NRA may adopt some such policy in the future. The "economy of plenty" psychology seems to be on the upswing right now.

We have too much to do this morning to debate about that, but here are two pertinent points:

1. If an antiproduction-control policy is adopted by NRA for future codes, those now written in existing codes will be weakened. It is much harder to defend a plan against its opponents when it is known that the NRA is also on record against it. We say that, as a believer in machine hour limitation. We merely think this fact should be faced.

2. In a recent *Business Week* poll, it was revealed that no industry reporting on production control wants to abandon such provisions, although several see need for changes. Certainly, the wishes of these industries should be protected; such policies should not be decided by industries without experience in the specific problem.

All of which is respectfully submitted to the NRA as one breeze which its "trial balloon" encountered.—*Editor.*

Sales Alertness

Principal weapon against unemployment, business press survey reveals

BUSINESS paper editors almost unanimously recommend the continuation of minimum wages and maximum hours provisions, as contained in NRA codes, but at the same time look with disfavor upon price-fixing provisions. This apparent paradox is reflected in the results of a survey of fact and opinion conducted among members of the National Conference of Business Paper Editors and the Associated Business Papers, Inc. The paradox rests in the fact that business has usually been represented as insisting upon some form of price-fixing in return for its "acceptance" of the wages and hours provisions. Apparently, the reverse is true: business demands the latter but does not care for the former.

Another outstanding result of this survey is the disclosure that merchandising alertness is the principal weapon being used by American industry and business in its fight to remove the obstacles to unemployment. Of the specific constructive plans toward that end under way in the various fields, at least three-quarters are related to merchandising and embrace such projects as cooperative promotional campaigns, development of new or improved products, and group education toward resisting unwarranted price-cutting. The next most important group of plans high-lighted by the editors has to do with modernization of plant and equipment, and general improvement of manufacturing efficiency, with a view to cutting costs and thus increasing consumption of the product.

The principal conditions assigned as the obstacles to re-employment are, in order of importance: reluctance to make capital commitments due to lack of confidence; buyer-resistance due to higher costs and consequently higher prices; lack of capital or credit for expansion; depression of the capital goods industries; uncertainty as to labor conditions; Government competition with private enterprise; suicidal price-cutting, and increased taxation.

If any doubt exists as to whether labor relations are better or worse than they were before NRA, it should be dispelled by the results of this survey. Fifty per cent of the editors, representing all the major branches of American industry and business, reported they were definitely worse, 30% reported no change, and only 20% reported an improvement. Almost without exception, where a worse situation was noted, the major reason cited was the exploitation of Section 7A by organized labor in an attempt to increase union memberships.

On the question of restricting production by machine-hour limitations and other similar provisions, those relatively few editors whose fields have such restrictions mostly favored their continuance but under the direct supervision of the industries themselves.

Aside from price-fixing, these editors incline toward the continuance of fair trade practice provisions which curb unfair and uneconomic methods of doing business. More than half of those participating in the survey withheld judgment on the basis that it was too early to evaluate these plans, or that proper enforcement methods had not yet been devised. Of the remainder, however, the great majority reported beneficial results from such provisions. Furthermore, many of those editors who definitely oppose price-fixing—and these are in the majority—favor some form of price-reporting which tends to check sub-rosa and disastrous price-cutting.

The outlook in the fields represented by the member-publications participating in this survey is apparently encouraging at this time. Sixty per cent of the editors anticipate better volume of business in the last quarter of this year than during the corresponding period of 1933—average estimates of improvement ranging from 10 to 20%. Thirty per cent look for little change, while only 10% expect definitely worse conditions.

Work Assignment

Regulations specified by President

THROUGH four executive orders, dated Oct. 16, the President put into effect the recommendations of the Winant Board on work assignment. Three of these orders authorized the creation of a Work Assignment Board for the cotton, silk, and wool textile industries respectively; the fourth contained general rules and regulations for the three boards.

Each of the individual boards is composed of an impartial chairman, one representative of the employers, and one representative of the employees. The specific regulations for each board are similar to those contained in the Winant report, as noted in these columns last month.

The general rules and regulations contained in the fourth executive order provide that the Textile Labor Relations Board shall appoint a single individual as common chairman of the Assignment Boards in the cotton, silk, and wool industries. It is provided further that these three boards shall study the operation of the stretch-out in a number of representative plants and shall submit to the President before Jan. 1, 1935, recommendations for a permanent plan for regulation of work assignments. Such recommendations, it is specified, shall include, among other provisions, substantially the following principles:

(a) No employer shall increase the work assignments of any class of work until he has secured authorization therefor from the district impartial chairman (appointed by the Textile Work Assignment Board) of the district in which the mill operates. The district impartial chairman shall authorize extensions of work assignments only if the following conditions have been complied with:

(I) The employer has filed with the district impartial chairman and with the representatives of the employees affected a petition for authorization of extension of work assignments. The petition shall include a sworn statement on a form to be provided by the Textile Work Assignment Board indicating the conditions which have been established at the mill as the basis for extension.

(II) A period of six weeks has elapsed since the filing of the petition.

(III) Either (a) the representatives of labor affected have not filed a protest to the proposed extension before the end of the six weeks' period, or (b), if such protest has been filed, there has been a public hearing, with such investigation by the district impartial chairman or his agents as he may deem advisable, and the impartial chairman finds that the conditions which have been maintained throughout the six weeks' period justify the extension.

The fact that any employer has failed to maintain any of the conditions set forth in the statement accompanying the petition or which the existing work assignment was authorized shall be ground for the denial of the petition.

(b) The district impartial chairman, on petition by the representatives of any employees affected, shall investigate the justifiability of existing labor assignments, and if he finds any assignment involves excessive efforts by the workers, shall require the employer to reduce such assignment.

(c) Decisions of the district chairman rendered under the above provisions shall be subject to appeal to the Textile Work Assignment Board, whose decision shall be final.

Popularizing Research

emphasized at meeting of U. S. Institute

CONSIDERATION of the need for interpreting the results of scientific investigations in such a way as to be of greatest value to the industry occupied the major part of the annual meeting of the U. S. Institute for Textile Research, held Nov. 1, in New York. Prof. E. R. Schwarz, of Massachusetts Institute of Technology, discussed the problem from the viewpoint of the physicist; and Dr. Robert E. Rose, of E. I. du Pont de Nemours & Co., from that of the chemist. Dr. Karl T. Compton, president of M. I. T., and chairman of the advisory committee of the Textile Foundation, commented on the work of the Foundation and the Research Institute, and urged an even closer cooperation than now exists between these two organizations. Hon. Francis P. Garvan, president of the U. S. Institute, presided.

In his address, Professor Schwarz pointed out that a group of interpreters is now needed to translate the findings of research workers into terms which will make clear to the textile executive the significance of related studies in physics, chemistry, biology, and mathematics. He then cited the work which has been done recently on the orientation of textile fibers by means of polarized light, fluorescent dyes, and X-rays. Reports of these studies until interpreted are meaningless to the average executive and he pays little attention to them. On the other hand, when they are interpreted for him, he proceeds to put them into practical use, as described, for example, in an article in the October issue of TEXTILE WORLD, which shows how one mill utilizes the polarizing microscope as an aid in classifying and buying cotton. Our greatest need at the moment, according to Professor Schwarz, is proper interpretation of the growing store of basic facts, so that valuable applications may follow and the textile executive will actively support a coordinated research program.

Dr. Rose stated that for several years it has been apparent that the textile industry is not utilizing the information which is now available. In many directions the comparatively well-known facts of physics and chemistry are ignored. For example, although the theory of electrolytic dissociation was propounded in 1887, it was not until 1920, 33 years later, that the significance of this theory was made clear to the textile man and enabled him to utilize pH measurements in the control of bleaching and dyeing operations, etc. The scientifically trained man who has the gift of translating the language of science into the mother tongue is very hard to find and he must be encouraged by industry.

At the business meeting all officers, directors, and members of the executive committee were re-elected with the following exceptions: New members of the board to succeed Dr. E. H. Killheffer, A. R. Mitchell, Jr., and C. H. Clark, resigned, are Dr. Robert E. Rose; Dr. H. DeWitt Smith, A. M. Tenney Associates; and J. E. Edgerton, Lebanon Woolen Mills. Dr. Rose and Dr. Smith succeed Dr. Killheffer and H. V. R. Scheel as members of the executive committee. Prof. Louis A. Olney, Lowell Textile Institute; H. M. Chase, Riverside & Dan River Cotton Mills; and A. L. Lustig, Apponaug Co.; succeed Dr. Killheffer, Mr. Scheel, and K. P. Lewis as vice-presidents.

Here and There . . .

Facts and sayings of the month

"AFTER NRA: What?" asks Howard E. Coffin, chairman, Southeastern Cotton, Inc., in the *Premier Rayon Review*. His reason for asking is that "there can be no possible justification for the hope of the 'stand-patters' that all these new measures may be brought to an end, sharply, as of June, 19..." Mr. Coffin finds the new Government, with its manifold agencies, places all the responsibility in the hands of one man, the President. "Since it is humanly impossible for all decisions to be made by one man," he observes, "there are confusion and delay and conflict in connection with many issues which demand quick decision and coordination of action" . . . The answer? "I believe," says Mr. Coffin, "that utilization, immediately under the President, of a coordinating executive body similar to the Council of National Defense and its Advisory Commission—which were operative from 1916 to 1920—would enable us to correct many present faults, coordinate both governmental and civil activities, plan intelligently for the future, and make our national policies far more effective—for the lasting benefit of every American citizen."

* * *

Here is a challenge—and from the textile industry's old friend, A. D. Whiteside, now a member of the National Industrial Recovery Board: "The government is tending more and more to withdraw from codes where the Code Authorities know what they are about. The President of the United States is definitely hoping that industry will come through with constructive suggestions. There must be an answer, and it must come in before Jan. 1, because Congress is going to pass an NIRA. What it will be is up to you. The welfare of the United States for generations to come depends upon the mental attitude and actions of industry. Labor is organized, coordinated and articulate; it knows what it wants. I cannot say that about industry. You have 60 or 90 days opportunity now to coordinate your viewpoint. Decide what you want and study the proposals. If you do, I believe you will get the kind of a new law you want."

* * *

Best laugh of the month: Paid-up membership of United Textile Workers turned out to be 38,700 at the A. F. of L. Convention in California, according to Rodney Dutcher, in a Washington column in the Charlotte *News*. Union claims of 300,000 members seem to be merely a case of decimal-point trouble. Also, manufacturers who had estimated total at 60,000 apparently had been too generous . . . After all, there's a lot of difference between getting a man's name on a card, and getting his dues.

* * *

This, from our Washington correspondent, a realistic person who is not trying to sell anybody's papers: "Impartial observers feel that there is an unnecessarily large do-nothing element in the ranks of industry. Instead, those in that group should stop arguing about the merits of the Old Deal and the New Deal; about the status of durable goods and consumer goods; about the gold standard, the commodity dollar and the silver lining, and should determine to go ahead in spite of every handicap. Even those who are out of sympathy with the Administration admit that it is beyond the power of the New Deal to keep business down. There is more actual physical property per person in this country than in any other. It is ample to support a high rate of business activity and a high standard of living if those in the do-nothing category will come out of their storm cellars."

Short Cut to Twist

By William N. Chace
Lawton Mills Corp., New York

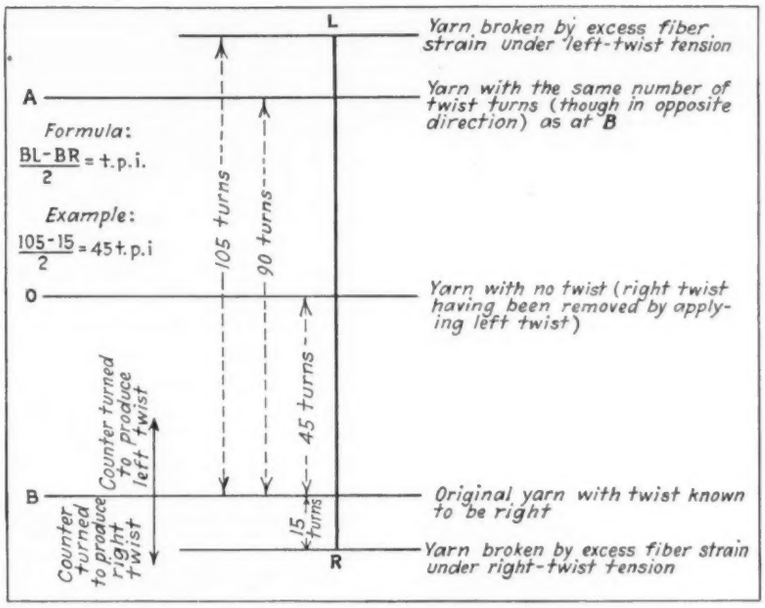

L
Yarn broken by excess fiber strain under left-twist tension
A
Yarn with the same number of twist turns (though in opposite direction) as at B
Formula:
BL-BR/2 = t.p.i.
Example:
105-15/2 = 45 t.p.i
105 turns
90 turns
45 turns
0
Yarn with no twist (right twist having been removed by applying left twist)
Counter turned to produce left twist
B
Original yarn with twist known to be right
Counter turned to produce right twist
15 turns
R
Yarn broken by excess fiber strain under right-twist tension

Diagram representing new twist-finding method

Turns per inch found quickly by new method on old apparatus

◆ *Life is growing more complex, we are told. In some respects, however, it is growing simpler. Those twist examiners, for example, who adopt the ingenious new method which Mr. Chace has developed and which he outlines in this article may find that they can count the turns per inch in cotton yarns from 12s to 150s (and of any fiber from an inch to Egyptian), with only a fraction of the time and worry formerly expended. Tests, incidentally, have verified the reliability of Mr. Chace's method.*

TWIST-FINDING in singles yarns, especially those of higher counts, is a matter of great importance—for the very fact that it is difficult, painstaking, and patience-trying. Designers and examiners have spent so much time and nervous energy in this work that they have long hoped for and anticipated a method for its alleviation. They have seen and coveted new apparatus which insures this escape—but too expensively.

Here is a system that will do considerable toward achieving the desired time- and patience-saving. It appears to be long and complicated simply because its very simplicity demands careful and explicit explanation. If the reader will merely understand that it calls for a few turns of the twist counter in both directions until the yarn is ruptured by excess fiber strain under twist tension, he need only look at the chart with its figures and read no further.

But for those who wish an explanation of this principle, the following matter will be found easily digestible. It is one of those discoveries which amaze you as much by its simplicity as by its results. You will wonder why you "never happened to think of it" yourself.

The only equipment or apparatus necessary is the ordinary standard twist counter, with which every designer and examiner is already only too familiar.

For the purpose of illustration, we shall take a yarn known to have a regular or right twist. The number of turns per inch is to be found.

Study the chart for a moment, bearing in mind that it is merely a record of turns of the twist counter. Those from *B* to *R* indicate the number of right turns necessary to break the yarn in question by an excess fiber strain under right-twist tension—too many, or an "over-dose" of, right turns in an already right-twisted yarn.

Those from *B* to *L* indicate the number of left turns necessary to break the yarn in question by an excess fiber strain under left-twist tension—too much left twist. At point *B* the yarn (known to be of right twist) is at its undisturbed position when placed in the twist counter. At point *O*, which is in the direction of left twist, the number of left turns necessary to remove the existing right twist to the point of no twist has been inserted. The number of turns represented by *B* to *O* is the number of right turns in the yarn, and this is what we are seeking to determine. *L* and *R* are the points at which the yarn breaks by excess fiber strain under left and right twist respectively. *A* represents the yarn at the point under left-twist tension where the fiber strain is equal to that at *B* under right-twist tension.

Disregarding the chart for a moment, we realize, of course, that more right twist in an already right-twisted yarn will soon break the fibers. We also know that when we put left twist into a right-twisted yarn we first reach a point where all the right twist is accordingly removed and that on continuing to put in left twist

Note: This article was written before the recent meeting of Committee D-13 proposed a new terminology for designating the directions of twist. By "right twist" Mr. Chace refers to Z-twist; and by "left twist" he refers to S-twist.—EDITOR.

we soon break the yarn by an "over-dose" of the opposite (or left) twist.

Now back to the chart. We know the twist to be right. We know that the distance (or number of twist turns) from *B* to *R* will be the same as from *A* to *L*, although in the opposite direction. Accordingly, we know that half the turns between *B* and *A*, or the full number between *B* and *O*, will be the number of turns in the yarn. Thus, to find the number of turns from *B* to *O* we adopt the following procedure:

1. Adjust the jaws of the twist counter to 1 in.
2. Place the yarn (with twist already known to be right) in counter and release weight. The yarn is at position *B*.
3. Turn counter slowly in direction to add more right twist until the fiber strain is so great that the yarn finally breaks under right-twist tension at position *R*. The reading of the counter is (for example) 15.
4. Once more place an end of the same yarn in the counter, but do not release the weight. The yarn is again at position *B*.
5. Now turn the counter in the direction to put in left twist. Slowly the yarn undergoes the change from *B* (with its normal right twist) to *O*, where it has no twist. Continue, past *O*, to add left twist.
6. When you feel the yarn has gained sufficient left twist to sustain the weight, release the weight. It is now approximately at position *A*, where it has the same number of left turns as the yarn originally had right turns at its normal position *B*. At *A*, then, its fiber strain under twist tension is identical to that at *B*, the only difference being the direction of the twist.
7. Continue slowly to add more left twist until the excess fiber strain under left-twist tension breaks the yarn at position *L*. The reading of the counter shows (for example) that 105 left turns were necessary.
8. Since *B* to *R* is the same as from *A* to *L*, *A* must be 15 turns from *L*—or 90 from *B*.
9. And since *O* (no twist) is half way between *B* and *A*, then one-half of 90, or 45, is the position of *O*, or no twist.
10. Thus it is concluded that *O*, or 45, is the number of turns of left twist necessary to bring a right-twisted yarn to zero twist. So the yarn (in this example) had 45 right-twist turns per inch.

However, just as the examiner is used to finding the twist in yarns from five to ten times before venturing to publish its twist, here in this system the same thing must be done. This is by no means through any fault of the system, but is because, as we are all aware, twist will vary greatly in yarn from even the same bobbin and consequently an average must be found over a number of tests.

This system is based on the fact that fiber strain under twist tension is positively true and definite. Therefore, reliance on the principle which underlies the system is fully justified. Dependable constancy in percentage of deviation has indicated that its findings are of more than sufficient precision in the work to which it is applied.

The system will be found to cut the designer's or examiner's time in twist-finding to as much as, or more than, a fourth in the case of fine-count yarns—it will cut his annoyance and trouble to a smile! Put it to a fair trial. Challenge its claims by honest, rigid test. Your results will be sufficient proof and appeal for adoption.

Although the writer can hardly guarantee that the system will be 100% correct under all conceivable conditions, he does not hesitate to say that it has never failed him in the hundreds of cases where he has relied on its speed and accuracy. He has sung its praises with singles cotton yarns from 12s to 150s—and with fibers from an inch to Egyptian. He has yet to see a proved refutation of his claims for ease, speed, and accuracy.

Textile Novels . . .

A strike in France—a boom and crash in Lancashire

PHYLLIS BENTLEY seems to have set a new vogue for novels grounded in the textile industry. Her "Inheritance," a saga of Yorkshire, and her "Modern Tragedy," a post-war story of the same locale, have been followed by others, both abroad and in this country, which have drawn upon the rich lore of an age-old industry.

The two most recent works—reviewed below—deal respectively with a strike in France, and a boom and crash in Lancashire.

When the Looms Are Silent, by Maxence Van der Meersch (translated by Frederick A. Blossom); William Morrow & Co., New York; $2.50.

Whether a man is a manufacturer or an employee, a radical or a reactionary, he should read this tragic story of a modern strike. The action is laid in Rubaix, France, but the issues and the human reactions are laid in the universe.

It is not—cannot be—pleasant reading. "Gaunt" seems to us to be the term that best describes it. Its theme is futility; the futility of industrial warfare. Its cardinal virtue is sincerity. But it has many other virtues: richness of style, dramatic realism, brilliant character depiction.

From the moment when the members of the unions first vote for the strike in a spirit of high adventure—a holiday spirit—to the time when they vote to return, accepting a "delayed victory" which in reality is defeat, the reader is led through a chronicle of suffering, of anguish.

The author, so far as we can tell, is not trying to espouse a cause; he is merely trying to paint a picture. And he paints it vividly; almost too vividly for the reader's peace of mind.

It would almost seem that if, during the events leading up to a strike, the reading of such a book were made compulsory, humanity and fear would combine to make the strike impossible. But that, too, is what many of us have thought about books treating similarly of war between nations. Unfortunately, there is always a new generation which knows nothing about the horror, grasps eagerly the "high adventure." The elders—those who have lived through other strikes—find no audience for their forebodings.

But there seems nothing to do but to go on telling the truth—about both kinds of war—and to hope that, gradually, the truth may prevail. Van der Meersch tells the truth in "When the Looms Are Silent;" he tells it brilliantly, convincingly. The result is far more than a novel; it is an inspired contribution to advanced thinking.

Harvest in the North, by James Lansdale Hodson; Alfred A. Knopf, New York; $2.50.

In a sense, "Harvest in the North" does something of the same job for Lancashire that Phyllis Bentley's "Modern Tragedy" did for Yorkshire. It tells the story of a Lancashire town—of all its people and classes—during the post-war boom and during the disastrous crash that followed it. To this reviewer, the dimensions of the Lancashire boom, as revealed in this book, came somewhat as a surprise.

In 1919 and 1920, the world devoured the cotton goods that poured out of the Lancashire mills. Shares sky-rocketed, wages rose, wealth flooded the community and submerged old ideals, old ways of life. In this novel we come to know the people of a typical Lancashire town. We know them in the boom, and we are with them when, suddenly, the bottom of the market is found. The crash! Unemployment, poverty, destitution, the collapse of traditional wealth, the dislocation of forces and families that seemed imperishably rooted in the life of the county. We follow the characters to the end: their dramas, conflicts, and tragedies.

Strike Aftermath . . .

What the workers, north and south, think about it all

◆ *We asked our district editors, in the South and New England, to find out what the average textile worker thinks about the strike now that it is all over. Here are their reports:*

In the South . . .

IN the South, now that the strike is over, there is still a wide difference of opinion among textile workers regarding labor unions. In order to illustrate this, we shall discuss three hypothetical towns: Town A, strongly unionized, before, during and after the strike; Town B, an anti-union stronghold where the mills operated without loss of time throughout the trouble; Town C, located between A and B, where opinion was divided and conflict raged during the strike.

Today, Town A is still strongly unionized, Town B is extremely antagonistic to the union, and Town C is host to a very unpleasant state of affairs. In the last named town, neighbors and even families whose opinions and sympathies differed during the strike, are still in some cases not on speaking terms. Fortunately, however, this condition is gradually being corrected.

To show even more clearly the difference of feeling which exists, it is said that the textile workers in Town A "think more of Francis Gorman than of President Roosevelt" and have been led to understand that Gorman is not only directly responsible for the cotton textile code and its benefits, but that he actually wrote it himself.

In line with such absurd beliefs, the writer compiled a list of statements and promises alleged to have been made by union organizers before and during the strike. A few of them are as follows:

1. "The NRA was created in order that the unions might receive recognition from the manufacturers. President Roosevelt is back of the union and wants you to join."
2. "When we call this strike and all the mills are shut down, you will receive no Government relief food unless you carry a union card."
3. "Join the union today for $1; next week membership fee will have advanced to $7.50; the following week it will be $15." (This statement made during the height of excitement with 50% of mills closed down.)
4. "The mill management cannot, for any reason, fire a member without the sanction of the union."
5. "This mill will soon be a closed shop and non-union workers will have to give up their jobs."
6. "The mill management approves of the closed shop and all the officials and office force carry cards."
7. "The union has $6,000,000 in its treasury and will care for you during the strike." (Statement made prior to strike.)

On the other hand, the strike was indirectly responsible for development of a very healthy situation in some localities, an outstanding example being Piedmont, S. C. Employees of the Piedmont Mfg. Co., *without suggestion or assistance from the management*, have organized an "Employees' Association," claiming a membership of over 700, a majority of the workers in the plant. The writer attended a meeting of this enthusiastic group and was proudly shown a charter granted by the State of South Carolina, said to be the only one of its kind in existence.* Quoting from its constitution, the purpose of this association is "to promote good feeling, harmony and full cooperation between the employees of Piedmont Mfg. Co. and the management thereof." A further purpose is to deal with the management on questions relating to wages, working conditions, general improvement of the plant and village, cost reductions, quality of production, education, recreation, religious exercises and sanitation; in short, "to make of Piedmont a better place in which to live and work." The feeling of this group of loyal employees regarding labor unions is shown by again quoting from the constitution: "Any member hereof wishing to join any other labor organization may do so, but the joining of any other labor organization shall be considered his resignation from this association."

Looking back over the turbulent days of the strike, it is literally a miracle that hundreds of people were not killed and a great deal more property damaged. To the mill management goes the credit for using good judgment and averting a national tragedy. For example, now that the excitement is over, many mill officials will admit having seen hundreds of shotguns and other weapons brought into their plants by employees who were determined to "protect their jobs" from the ravages of flying squadrons.

Interesting weapons found in the wake of flying squadrons, particularly where there were skirmishes, include: ice picks, razor blades imbedded in clubs, nails imbedded in clubs, picker sticks, baseball bats, knives and pistols.

For the time, it is safe to say that at least 80% of the southern textile workers have had their fill of striking, although at this writing daily papers are carrying front page streamers to the effect that "Gorman predicts wave of local strikes in the South unless discrimination against union workers ceases." From such statements, it is only too obvious that the union is not finished with the South—and in this area such endeavors will inevitably lead to more strife and suffering.

*Since this was written, we understand that a similar organization has been granted a charter at Chiquola Mfg. Co., Honeapath, S. C.—scene of seven violent deaths during the strike.

From New England . . .

AND this from New England:

We had to prowl around quite a bit before we found a worker who more or less put together the bits that other New England workers had given us on their present views, but here he is!

"You ask me how I feel now and what I think about what's ahead. I feel now just about the same as I always did. I wish I had more money. Who doesn't, these days? If business gets better and I'm sure of full time I'll feel better. Between ourselves, all I care about is what's in my pay envelope at the end of the week. This business about reducing hours and employing more may sound good to the big shots, but it doesn't mean much to me, Joe Smith, as long as *I* have some sort of a job.

"I don't think much about what is going to happen next year or the year after, any more than I ever did. You can bet, though, that if I see a good chance to get more cash in the envelope I'll be out there shouting with the rest of them. I didn't see much chance for getting anything from this last strike, so I wasn't so hot for it.

"Did I take any part in the strike? Well, we didn't have any quarrel with our boss, but he decided after a bit to shut the mill down to avoid trouble. The Blank Mill was still running and do you suppose I wanted to let those bums working there give me the laugh for walking the streets while they had work? Nothing doing. I went over with the rest of the gang and booed until the Blank Mill shut down.

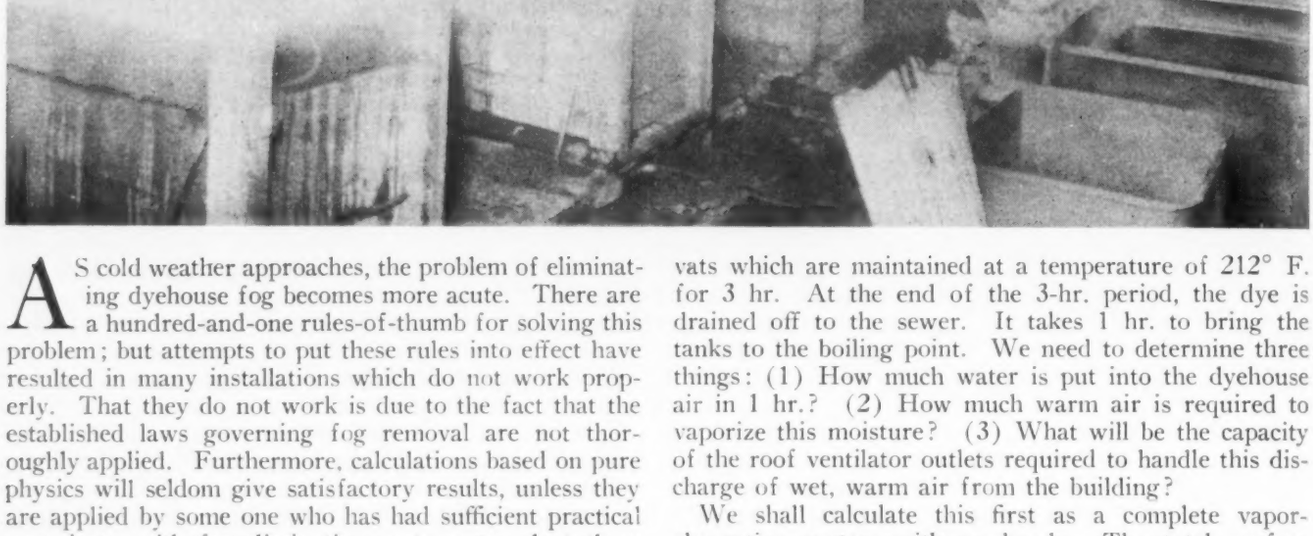
"What did I gain by the strike? You'll have to get one of the big shots to tell you that. Me, myself, I'm just where I was before and I'm sitting tight hoping that business gets better.

"About this intimidation stuff and am I a member of the union? Say, Brother, you go along and ask somebody else those questions."

Dyehouse Fog

can be eliminated at low cost by intelligent planning of system

By B. K. Paget
Swartwout Co.
Cleveland, Ohio



AS cold weather approaches, the problem of eliminating dyehouse fog becomes more acute. There are a hundred-and-one rules-of-thumb for solving this problem; but attempts to put these rules into effect have resulted in many installations which do not work properly. That they do not work is due to the fact that the established laws governing fog removal are not thoroughly applied. Furthermore, calculations based on pure physics will seldom give satisfactory results, unless they are applied by some one who has had sufficient practical experience with fog-eliminating systems to adapt these calculations to actual plant conditions. Today a job must be figured closely to be worth the investment. Overhead must be kept at a minimum; hence excessive factors of safety are uneconomical. Intelligent planning of the system is necessary if dyehouse fog is to be eliminated at the lowest cost.

There are two ways in which fog can be eliminated: (1) by means of complete vapor-absorption systems; and (2) by means of hood jobs with partial absorption.

There are times when there is a perfectly good reason why hoods cannot be employed. Usually, however, when they can be used, they are less expensive, both in initial and operating costs. With hoods, certain critical air velocities are maintained which enable a considerable portion of the moisture to be carried away as free moisture, without actual absorption. As a result, there is a smaller volume of air to be handled, and less ventilator capacity and less air-heating capacity are required.

Whichever system is employed, the first step is to find out how much moisture is put into the room by the dyeing equipment installed therein. The following formula enables one to determine the amount of water evaporated from dye vats and other machines heated to 212° F. with live steam.

$$W = \frac{95 + 0.425\,V}{r}(e_w - e_a) \text{ in which}$$

W = pounds of water evaporated per square foot per hour
V = longitudinal velocity of air passing over water surface
r = latent heat of water in tank at tank temperature
e_w = vapor pressure of water in tank at tank liquid temperature expressed in inches of mercury
e_a = vapor pressure of water in air of room at dew-point temperature (this is affected by the humidity in the room) expressed in inches of mercury

Let us assume that we have a dyehouse 65 ft. long, 55 ft. wide, 35 ft. high at the eaves, and 40 ft. high at the peak of the roof. In this dyehouse are two 10x30 ft. vats which are maintained at a temperature of 212° F. for 3 hr. At the end of the 3-hr. period, the dye is drained off to the sewer. It takes 1 hr. to bring the tanks to the boiling point. We need to determine three things: (1) How much water is put into the dyehouse air in 1 hr.? (2) How much warm air is required to vaporize this moisture? (3) What will be the capacity of the roof ventilator outlets required to handle this discharge of wet, warm air from the building?

We shall calculate this first as a complete vapor-absorption system with no hoods. The total surface area of the two dye vats is 600 sq.ft. The air in the room will be at about 50% relative humidity at 70° F., with a dew point of 51° F. From the formula given above, we now determine the amount of water which must be removed.

$$W = \frac{95 + 0.425\,V}{r}(e_w - e_a)$$

$$W = \frac{95 + (0.425 \times 85)}{970}(29.92 - 0.3762) = 3.99$$

That is, approximately 4 lb. of water is evaporated per square foot of tank surface per hour. Since there is a total of 600 sq.ft. of tank surface, 2,400 lb. of water is put into the dyehouse air every hour that the tanks are boiling. There are 7,000 grains of water per pound. therefore 16,800,000 grains (2,400 × 7,000) of water must be absorbed and removed every hour. To allow for winter conditions, most jobs are based on an outdoor temperature of 0° F. and entering air of 85% relative humidity. The entering air must be heated to a room temperature of 70° F. and, in addition, sufficient extra heat must be provided to absorb the moisture and to offset the building losses. Let us now calculate the building losses. We shall assume that the floor is of 6-in. concrete on cinders, the roof of standard mill construction, the walls of 13-in. brick, and the wall area is 50% glass, single sash. We shall assume, further, that only two walls are exposed, and shall disregard the small triangular sections below the eaves at the end of the building. The transmission factor (B.t.u. per square foot per degree of temperature difference per hour) is as follows: Floor, 0.25; Wall, 0.25; Roof, 0.36; Glass, 1.10.

Total exposed wall area = $(55 + 65) \times 35 = 120 \times 35 = 4200$ sq. ft.
Net wall area = $4200 \times \frac{1}{2} = 2100$ sq. ft.
Glass area = $4200 \times \frac{1}{2} = 2100$ sq. ft.
Floor area = $55 \times 65 = 3575$ sq. ft.
Roof area = $56 \times 65 = 3640$ sq. ft.

With a 70° F. temperature difference, air to air, and a ground temperature of 30° F., the losses are as follows:

Wall = 0.25 × 2100 × 70 =	36,750 B.t.u.
Glass = 1.1 × 2100 × 70 =	161,700 B.t.u.
Floor = 0.25 × 3575 × 40 =	35,750 B.t.u.
Roof = 0.36 × 3640 × 70 =	91,728 B.t.u.
Total loss per hour (doors omitted) =	325,928 B.t.u.

At this point we must make some assumptions based on experience. Let's call these "educated guesses." They are as follows: (1) The air passing out through the roof vents will not be above 70° F. if the maintained temperature of the building is 70° F. (2) It is impossible to combine warm air and moisture so thoroughly that we get 100% saturation; 85% is a more likely figure. (3) The outlet air will be at a temperature of 70° F. and 85% relative humidity. (4) At 70° F. and 85% relative humidity the dew point (below which condensation will occur) is 65° F. The wet-bulb temperature will be 67° F. The grains of moisture per pound dry air at saturation will be 92.6.

Since we have assumed the entering air to be at 0° F. and 85% relative humidity, its dew point can be neglected (it is slightly less than zero), and its moisture capacity under these conditions can be taken as 6 grains per pound. Therefore the gain in moisture capacity per pound of air between entering and exit conditions is 92.6 — 6 = 86.6 grains per pound of air moved through the building. We need to absorb 16,800,000 grains per hour. Therefore we need 16,800,000 ÷ 86.6 = 194,000 lb. of air per hour = 3,230 lb. of air per minute to be supplied.

We should note at this point that the entering air is cold—hence its specific volume per pound is small—but the exit air is warm, so that its specific volume per pound is larger. However, the same number of pounds that is taken in by the heater fans is also discharged at the ventilator outlets on the roof. The specific volume at inlet conditions is 11.59 cu.ft. per pound. The specific volume at outlet conditions is 13.64 cu.ft. per pound. Hence each pound of air increases 17.7% ([13.64 — 11.59] ÷ 11.59 = 2.05 ÷ 11.59) in volume in passing from the inlet to the outlet condition. The total volume of air at the inlet equals the specific volume multiplied by the pounds handled, that is, 11.59 × 3,230 = 37,436 cu.ft. per minute. The volume of air at the outlet equals 13.64 × 3,230 = 44,057 cu.ft. per minute.

A trade secret enters the picture at this point. If we provide ventilator outlet capacity exactly as called for above, we shall have a perfect, balanced-draft, ventilating system. Experience tells us, however, that a building under a slight pressure is better designed from the ventilation standpoint. If the room is under a slight pressure any leakage that occurs will be outward, not inward, and fog banks around leaky windows will be avoided. Good practice is to provide an outlet capacity for half of the volume increase shown by the calculations—in this case a total of 40,746 cu.ft. per minute.

Now let us find out how many B.t.u. will be required for this vapor-absorption problem. The total B.t.u. to be supplied to the air entering the building must care for building losses plus the heating of 3,230 lb. of entering air per minute to a temperature of at least 70° F. at the heater outlet. (The heat available from the hot dye tanks is omitted. This is because such process heat is not fully available during the starting-up process when it is most required.)

The B.t.u. per pound of inlet air	= 0.96
The B.t.u. per pound of outlet air	= 31.15
The B.t.u. gain per pound	= 30.19 × 3230 × 60 =
5,850,822 B.t.u. per hour	
Building losses	= 325,928
Air requirements	= 5,850,822
Total B.t.u. required per hour	= 6,176,750

If a hood system is employed, 40% of the moisture can be removed in suspension without actually absorbing it. Therefore the total amount of moisture to be absorbed will be 60% of 16,800,000, or 10,080,000 grains per hour. The heated-air requirements will be 10,080,000 ÷ 86.6 = 116,396 lb. of air per hour, or 1,940 lb. of air per minute.

The volume of air at the inlet equals 11.59 × 1,940 = 22,485 cu.ft. per minute.

The volume of air at the outlet equals 13.64 × 1,940 = 26,462 cu.ft. per minute.

Allowing for one-half of this increase at the outlet, we find the capacity of the outlet should be 24,473 cu.ft. per minute. The B.t.u. required equals the B.t.u. gain per lb. multiplied by the pounds handled. That is, 30.19 × 1,940 × 60 = 3,514,116 B.t.u. per hour.

Building losses	= 325,928
Air requirements	= 3,514,116
Total B.t.u. required per hour	= 3,840,044

The saving in heat requirements due to the use of hoods equals (6,176,750 — 3,840,044) ÷ 6,176,750 = 37.8%. It should be noted that the savings on fixed charges will parallel quite closely the 38% saving in heat requirements. It is evident, therefore, that in studying his fog-removal problems, the textile man should consider carefully the feasibility of using hoods before he decides on the type of system to employ.

One point should be mentioned here. The writer has been in some plants which have fog-removal problems similar to the one in the dyehouse we have been discussing, and has seen unit heaters recirculating the air. The people responsible for this should hang their heads in shame. A sponge once saturated can absorb no more water, be it dipped ever so often in a pail of water. Air once saturated with moisture can absorb no more, be it circulated ever so often through a moisture-laden room. Unit heaters are excellent when they bring in outdoor air; but when used to recirculate moisture-laden air, they are worthless as fog eliminators.

A competent engineer, by taking into consideration every available source of heat in the dyehouse, can often make a considerable reduction in the amount of heat supplied. Radiation from exposed steam piping is often quite appreciable. Further, some plants have rooms adjacent to the dyehouse that are filled with quite warm and relatively dry air. Often some of the heat from these adjacent rooms can be borrowed to cut down the fresh warm-air supply otherwise required for the dyehouse. Careful testing will discover how much of this excess heat can be borrowed without dropping the temperature in the adjacent areas too low for comfort or for possible fog production therein. The industrial moisture-removal problem should be handled with all the care of the efficient power-plant engineer, who uses every skillful trick to conserve heat and prevent waste.

D-13 Favors "S-Z Twist"

Cotton men offer quality standards, wool group votes for Typp system

ON ITS twentieth anniversary, Committee D-13, the energetic and increasingly influential textile committee of the American Society for Testing Materials, gave new evidence of its vigor and courage. In its three-day fall session at the Hotel Pennsylvania, New York, Oct. 17 to 19, it held sixteen sub-committee meetings, a banquet, and a general meeting; and it took steps to inaugurate some of the most ambitious standardization it has undertaken.

First in importance, it sought to end the long-existing confusion caused by the contradictory terms for designating direction of twist in yarns and to do this through the adoption of terms never before employed for such designation. Second, it prepared to establish the first standards of specifications and test methods for cotton-fiber quality ever to reach the D-13 books. A standard numbering system for woolen and worsted yarns was started through the approval routine of the subcommittee on wool, and a test method for determining shrinkage in silk and rayon broad goods was launched by the silk committee. Another outstanding accomplishment was the formal proposal of the machine subcommittee to include the constant-rate-of-load tester among the approved machines for testing tensile strength and elongation.

All the work mentioned was carried through as far as the careful routine of D-13 permits at one meeting. Although this means, on the basis of past experience, that the projects will probably receive ultimate approval, they are not yet A.S.T.M. standards. They must be voted on again by Committee D-13 through letter ballot and stand for a period as tentative standards before they pass through the final steps which give them the official approval of the parent society.

The new terms selected for designating the direction of twist are the "S" and "Z" proposed by E. D. Fowle in the August issue of TEXTILE WORLD. The definition which was drawn up to fit them by the D-13 subcommittee on nomenclature and definitions, under the chairmanship of A. L. Brassell, United States Testing Co., is as follows: "Twist, Direction of—A yarn or cord has S-twist if, when it is held in a vertical position, the spirals conform in slope to the central portion of the letter 'S,' and Z-twist if the spirals conform in slope to the central portion of the letter 'Z.'" It is proposed to publish the accompanying diagram with the definition.

The quality standards for raw cotton were developed by a subcommittee under the chairmanship of Dr. R. W. Webb, Bureau of Agricultural Economics, Washington. They include tentative specifications and test methods for the following: (1) fiber length and fiber length distribution, (2) fiber fineness, (3) fiber immaturity count, and (4) strength of raw cotton. Dr. Webb received general congratulations for his important accomplishments.

The Typp numbering system, which met with the approval of the wool subcommittee, was first proposed by Mr. Fowle as a universal yarn-numbering system in the April 23, 1932, issue of TEXTILE WORLD. Since then it has been adopted officially by the Bureau of Standards and is the only system used in the Federal Standard Stock Catalog for designating the counts of cotton, woolen, worsted, silk, rayon, linen, and all other yarns. The unit of the system is a *thousand yards per pound*, and the term "typp" (pronounced "tip") is built up from the initials of the words composing that phrase. Thus, a 30-typp yarn has 30,000 yd. per pound. The chief merit of the Typp system is its simple decimal relation to the yards per pound, a condition which makes conversion from any other system relatively easy. This was only one of several important pieces of business carried through by this vigorous wool subcommittee. It is one of the youngest in D-13 and is under the able chairmanship of G. E. Hopkins, of Bigelow-Sanford Carpet Co.

The testing method for shrinkage in silk and rayon broad goods was noteworthy as the first completed project to be submitted by H. A. Mereness, new chairman of the silk subcommittee. Mr. Mereness heads the technical advisory committee of the National Federation of Textiles, Inc., and his recent entrance into the activities of D-13 is looked upon as of potential benefit to both organizations.

Recognition of the constant-rate-of-load machine paves the way for a more general use of this machine, which may become the standard tensile-strength tester. (Its importance was discussed in the article, "Future of Testing," printed in the May, 1934, issue of this publication.)

Other business conducted at the three-day session included the submission to letter ballot of a revision in the methods for testing elongation proposed by the methods subcommittee B1, Sec. 1, under W. D. Appel, Bureau of Standards. The following progress was reported: completion of many cotton-yarn numbering tests and rechecking of others (report by subcommittee A1, Sec. 2, under R. H. Adams, Callaway Mills), continuance of the work of correlating tire-cord tests conducted in the various laboratories (by A1, Sec. 4, under M. Castricum, United States Rubber Products, Inc.), progress toward insuring guaranteed yardage of sewing thread through establishing a definite thread tension in reeling (by A1, Sec. 8, under F. S. Cobb, Seamans & Cobb Co.), preparations to revise rayon-identification methods (by A2, Sec. 1, under A. M. Tenney, A. M. Tenney Associates), development of quality tests for floor coverings (by A3, Sec. 1, under G. E. Hopkins, Bigelow-Sanford Carpet Co.), improvement of accuracy in free fat and soap fat specifications (also by the wool subcommittee A3, Sec. 1), revisions in specifications for asbestos tape (by A4, under J. M. Weaver, Raybestos-Manhattan), work on tests for dye-fastness to laundering and for slippage (by A7, the subcommittee on silk and its products, under Mr.

Mereness), and progress on thickness tests (by B1, Sec. 1, under Mr. Appel).

The meeting marked the definite launching of a new subcommittee, B5, on sampling and the presentation and interpretation of data, under the chairmanship of A. G. Ashcroft, Alexander Smith & Sons Carpet Co. The scope of subcommittee A1, Sec. 5, under B. L. Whittier, Mt. Vernon-Woodberry Mills, was expanded to include all heavy cotton woven fabrics. The subcommittee A3 was divided into Sec. 1 on wool, Sec. 2 on felt, Sec. 3 on woolen and worsted yarns, and Sec. 4 on wool fabrics. W. H. Whitcomb, secretary of D-13, announced that all the proposed standards recently submitted to letter ballot and having reference to hard-scoured content of wool, tolerances and test methods for woolen and worsted yarns, asbestos grading, and chafer-fabric constructions were voted on favorably and are now tentative standards.

Prof. H. J. Ball, of Lowell Textile Institute, chairman of Committee D-13, announced that the tentative standards on electrical insulating materials, D335-34 and D203-33, had been accepted as A.S.T.M. standards and that A.S.T.M. standard D39-34, on methods of testing woven fabrics, had been accepted by the American Standards Association. Professor Ball also announced that an exhibit of testing and research apparatus would be held at the annual meeting of the American Society for Testing Materials in Detroit next June. He extended the thanks of the committee to Douglas G. Woolf, editor of TEXTILE WORLD, for an editorial expressing approval of the work of the committee in his October issue. Providence, R. I., was tentatively selected as the place of the spring D-13 meeting.

Besides strictly business, the committee engaged in several "extra-curricula" activities. Under the auspices of the subcommittee on rayon fabrics—of which A. Sommaripa, DuPont Rayon Co., is chairman—the results of an interesting consumer survey made in the city of Pittsburgh were presented. The survey had been conducted by Prof. D. R. Craig, University of Pittsburgh, and Dr. P. F. Lazarfeld, of Vienna, and was discussed in detail by the former. It consisted of 800 interviews with consumers with a view to determining their attitude toward rayon garments. Greatest resistance to rayon fabrics was found among the younger and particularly the unmarried women and also among the more wealthy and intellectual groups. Dr. Lazarfeld pointed out that perhaps the best way to win over the non-users of rayon is to increase the appreciation of the users and so bring about a gradual spreading of acceptance. The report made at this meeting was a preliminary one, and a revised draft will be made public at a later date.

H. J. Jaquith, Minot Hooper & Co., a charter member of D-13, was toastmaster at the banquet and traced the progress made by the committee since its inception. The principal speaker was H. A. Mereness, of the National Federation of Textiles. Mr. Mereness declared that style changes are such an important factor in the use of silk and rayon fabrics that there is no economic gain in developing constructions which will wear or hold their color more than three seasons. He believes, he said, in standard specifications for shrinkage, resistance to slippage, and color fastness; and he pointed out that shrinkage discloses more than anything else about the physical characteristics of a fabric. He favors more general use of labeling and believes there is an unjustified economic loss in too many different widths of cloth and in too great a variety of colors. A width of 38½ in. should be standard, he declared, and the multitude of colors and shades should be reduced to a more reasonable number.

Three papers were presented at the general meeting. Prof. Ethel Phelps, University of Minnesota, reported the results of an investigation to determine what relation, if any, exists between the retail prices of wool flannels, serges, and gabardines and the qualities of those materials. An abstract of her paper appears on page 86 of this issue.

Dr. I. J. Saxl, Waypoyset Mfg. Co., discussed the interpretation of test data, pointing out the fallacy in using arithmetic averages and demonstrating methods for simplifying probability calculations. He described how charts can be prepared on heavy paper, cut up, and weighed to determine the acceptance or rejection of a lot of yarn. (An article by Dr. Saxl in the September issue of *Textile Research*, although devoted specifically to tests on rayon yarns, covered much the same ground.) H. F. Dodge, of Bell Telephone Laboratories, delivered a prepared discussion of Dr. Saxl's paper.

F. Noechel, Botany Worsted Mills, discussed the determination of twist in single woolen and worsted yarns. His interesting paper will be published in a later issue of TEXTILE WORLD.

The three-day session closed with a vote of thanks to H. J. Jaquith, who was in charge of the arrangements for this progress-making meeting.

TWO suggestions made by TEXTILE WORLD—both by E. D. Fowle, associate editor—have been considered favorably by Committee D-13; one, the Typp system of yarn numbering; and the other, the S and Z designation for direction of twist. We are naturally gratified that we have been able to make these contributions to the important work of standardization in textile technology.

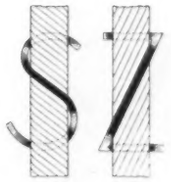
Far greater than any personal feeling in the matter, however, is our gratification that there is an organization of the type of D-13 which, by hard work, can bring order into a disordered field. The twist controversy alone demonstrates the continuing need for just the type of effort represented by this committee.—EDITOR.

Hosiery Men Adopt "S" and "Z"

Editor, TEXTILE WORLD,

I have been authorized by the Raw Silk Committee of the National Association of Hosiery Manufacturers to go on record in behalf of our Committee on the adoption of the nomenclature of "S" and "Z" twist for designating the direction of twist.

E. N. DITTON
Secretary, Raw Silk Committee,
Nat'l Assoc. of Hosiery Mfrs.



World Consumption

of American cotton threatened by foreign growths and artificial price situation at home

MAINTENANCE of American cotton prices above the usual parity with outside growths and the dislocation of foreign exchange markets, combined with sharp curtailment of domestic demand arising partly from the textile strike and from a disposition to trade from hand-to-mouth pending a more definite development of prospective requirements, have brought business down to a minimum in the American cotton markets this autumn. The filling of old contracts for September and early October shipment provided a fair offtake from early season receipts, but once this demand had been supplied, buying tapered off.

Sales in the ten designated spot markets of the South which had been running at about 75% of last year during September, fell to 54% of last season's turnover for the first three weeks of October. Holding in the South has been promoted by the Government 12c. loan offer, and cotton has been going into collateral for these loans rather than being pressed on the general market.

In the meantime speculative interest in the futures markets has been restricted, and there has been a lack of enterprise which is in sharp contrast with the activity normally anticipated at this season of the year. Prices, which had declined sharply from the high levels of the season touched early in August when December sold at 13.98, felt the stabilizing influence of the Government loan offer when that delivery sold off to 11.92 early in October and the market has since fluctuated irregularly around the 12 to 12½c. levels.

Since the market peak last August there has been considerable revision of opinions as to the probable relationship of supply to demand of American cotton for the current season. The crop estimate as of Aug. 1 (9,195,000 bales) was then regarded as likely to be further reduced because of drouth, and world consumption was believed to be holding up well. However, the Oct. 1 indication pointed to an outturn of 9,443,000 bales, while ideas of world's requirements were scaled down by evidences that foreign spinners, either because of a relatively high price for American or difficulty in financing purchases, were substituting foreign growths wherever possible.

Sentiment as to the extent of such substitutions was influenced by reports indicating that the world's carryover of foreign cotton at the beginning of this season was nearly a million bales above last year, while purely tentative estimates of this season's production outside the United States showed an increase of around 500,000 bales, suggesting a total supply of outside growths about 1,500,000 bales in excess of last year's figures. Whatever it may amount to for the season, the trend toward substitution was also reflected in preliminary estimates of world's consumption for August indicating a decrease of 283,000 bales in the use of American for that month compared with an increase of 4,000 bales in the consumption of foreign cotton. It is now doubtful that the world will consume more than 12,000,000 bales of American cotton this season, while some statistical authorities are inclined to place it around 11½ million bales.

Based on a minimum view of consuming needs and a probable crop of about 9½ million bales, there is still the prospect for a sharp reduction in the carryover of American cotton by the end of the season. It may be assumed, perhaps, that the Government loan has established a minimum price; but that spinners on the other hand will be slow to pay a price above that parity while other growths are obtainable or while needs can be supplied out of the old crop carryover of American. Sooner or later essential needs for consumption and the maintenance of working reserves must assert themselves, and there is an undercurrent of bullish sentiment in the futures market based on a theory that difficulty will be experienced in fully supplying such requirements at present prices in competition with the Government 12c. loan.

Little interest is evidenced in the probable showing of later crop figures, attention being centered upon prospective distribution and the probable program of the Agricultural Adjustment Administration with reference to next year's acreage. A formal announcement of this program is expected some time before the first of December. Nothing definite has been learned as to its provisions, but it has been pointed out that the contracts made by farmers who participated in the acreage reduction program for 1934 included an agreement to cooperate in 1935, with an understanding that the Administration would not ask for a reduction of more than 25% in the base acreage, compared with the 40% reduction taken last year.

Meanwhile, the opinion is expressed in some trade circles that there will be a further increase in cotton acreage abroad next season, particularly in Brazil which is said to be turning from coffee to cotton culture. The question indeed is being seriously considered whether the Government's objective of higher returns for southern growers can be achieved without a severe curtailment of export outlets for American cotton, or, alternatively, an increase in this country's general imports—which of course might involve a scaling down of industrial outputs in some directions.

The World's Statistical Position

Season	American Supply*	American Consumption	All other Growths Supply	All other Growths Consumption	‡Price of Am. Middling
1924-25	16,717	13,337	13,260	9,688	24.22
1925-26	19,561	14,060	13,971	9,987	19.68
1926-27	23,663	15,818	13,676	9,832	14.40
1927-28	20,802	15,596	14,144	9,832	19.72
1928-29	19,761	15,244	15,427	10,577	18.67
1929-30	19,233	13,046	16,731	11,805	15.79
1930-31	20,060	11,141	16,243	11,216	9.61
1931-32	25,796	12,568	14,685	10,501	5.89
1932-33	26,189	14,435	14,803	10,307	7.15
1933-34	24,466	13,720	17,116	11,581	10.81
1934-35†	20,130	.....	18,660	.....	.....

*Figures on supply include carry-overs from previous years.
†Based on preliminary estimates.
‡Average of quotations in the ten designated markets.

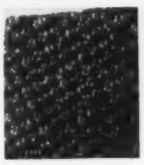


Fig. 1a. Wool fabric produced from Fig. 2 (natural size)

Fig. 1b. Same as Fig. 1a but magnified three times

Cottons by Wool Methods

Specifications for an all-cotton fabric and a mixture

By George R. Stevens

THE weave shown at Fig. 2, from which the fabric shown at Fig. 1 was produced, has been used a great deal for neat effects in men's wear worsteds for some time past, and it is proposed now to use it for an experimental fabric in all-cotton cloth for cheap suitings.

The yarn selected is a 2/30s black and white cotton yarn twisted 20/22 turns per inch, and the solid-color thread is to be a 15s black cotton. The yarn has sufficient twist to weave satisfactorily without being sized. The dressing is one black 15s, one black and white 2/30s; and the filling is the same as the warp. The warp layout should not be less than 3,200 ends laid in the reed about 64 in. plus listing of 30 ends white cotton 2/30s yarn. The pickage is to be 46/48 per inch in the loom.

This is an experimental cloth, and it must be remembered that a hard, boardy cloth is not wanted; neither is a soft, sleazy cloth. Therefore the pickage may need a little adjustment in order that the correct handle may be secured.

The writer believes that 64 in. in the loom should come out nearly correct, as it must be kept in mind that the drag of the rolls in pulling the pieces through the scouring machine will pull the cloth out a few inches per yard with a corresponding shrinkage in the width. A crabbing machine for scouring such fabrics would be ideal, but the cloth can be handled all right in any ordinary cloth washer.

The pieces must be carefully burled and all knots pulled through to the back, but the knots must not be cut off until the goods are through the scouring, etc., and are dried and conditioned. However, it is suggested that previous to scouring the goods be given a slight brushing on a fine-wire, one-way napping machine. This is not to raise any nap, but just to soften the handle, both face and back. The face should have at least three runs; and the back, two runs. The writer suggests that the goods, previous to being wet out, should be run into a dry and clean fulling mill and trapped fairly heavy for an hour or more. An examination should then be made to see if any softening of the cloth has been accomplished.

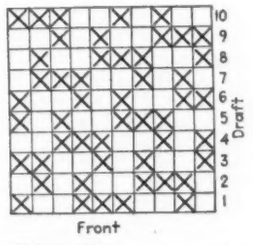


Fig. 2. Weave proposed for all-cotton suiting

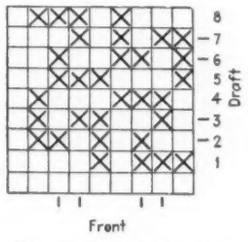


Fig. 3. Spot design for cotton-wool mixture

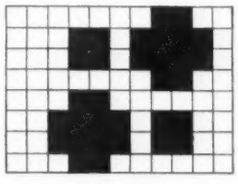


Fig. 4. Woven effect from Fig. 3

The goods may now be put into the washer and thoroughly washed. Special attention must be given to them to note whether any color comes off in the process. A small percentage of formaldehyde added to the washing liquor will often largely prevent bleeding of the dyes, but great care and good judgment regarding the temperature of the water will go far toward keeping the colors bright.

A bath of fuller's earth has a wonderful softening and cleansing effect on all classes of woolen goods, and it might be worth trying in this case with a view to improving the handle of this cotton cloth. The usual proportions, as used by manufacturers in Scotland, are two pailfuls of the refined earth to a barrel of water. The mixture is thoroughly stirred up to insure that all particles or lumps are thoroughly wet out and dissolved. The usual quantity for a four-piece washer is five to six pailfuls of the solution. Run 20 min. and rinse thoroughly in cold water. Extract, dry at a medium temperature, and condition. Brush well, without steam. The goods may not need any shearing, or at the most the slightest run over should be enough to level off any rough fibers. Press lightly, with just a trace of steam, as any excess moisture would give a hard and stiff finish. Condition again after pressing.

A neat spot design in black and white is shown in Figs. 3 and 4. This can also be produced in all medium and dark combinations. It is very suitable for cotton and wool mixtures or for fine all-wool quality. The writer believes that small weave effects in medium to rich dark colorings are much in demand. The 2x2 color arrangement gives the effect of Fig. 4.

We invite comments on Mr. Stevens' unique suggestions for finishing cotton fabric by wool methods.

Narrow-Fabric Weaves

A brief survey of miscellaneous types available to the designer

By Edwin J. Gibbons

◆ *As part of the process of winding up the most complete series of articles ever written on the design and construction of narrow woven fabrics, Mr. Gibbons here begins a rapid review of many miscellaneous weaves which the designer can often employ to advantage. Dates of publication for the preceding articles were listed on page 82 of the March issue.*

IMITATION gauze or mock leno may be formed by employing an interlacing in which certain ends and picks naturally group themselves together, and the different groups separate to form openings both warpwise and fillingwise. The effect is usually enhanced by causing the last thread of each group of ends or picks to interlace counter to the first thread of the next group, and may be made further pronounced by drawing all the ends in each group through a single dent in the reed and by skipping dents between the different groups. A loose construction must be used, and for best results the texture should be square or nearly square. Only the simplest of these weaves are employed in narrow fabrics.

Fig. 1 shows an imitation gauze weave that has been effected by altering a plain-weave ground so that every third end will interlace in 3/3 order. Two repeats each way are shown. The reeding and the points at which it is advisable to skip dents in the reed are indicated below the design.

Fig. 2 illustrates a narrow fabric interlaced according to the design shown in Fig. 1.

Fig. 3 shows another imitation-gauze weave based on the plain weave. Here the second and fourth ends in each group of five ends are caused to interlace in 5/5 order. Two repeats each way are shown.

In Fig. 4 may be seen two repeats each way of another style of imitation-gauze weave.

The characteristic of a true honeycomb weave is alternately depressed and raised squares in the fabric, and is the result of arranging in a particular manner groups of warp and filling floats in combination with plain weave. For best results, the texture should be square or nearly square; and it is preferable to have the warp and filling of nearly the same size or count. The effect is enhanced by the use of comparatively coarse yarns. In narrow fabrics these weaves are employed principally for the purpose of ornamentation.

Fig. 5 represents a honeycomb weave in which the sunken squares are exactly the same size as the raised squares. Three repeats each way are shown. This effect may be enlarged within reasonable bounds. Note that the repeat of the weave is wider than it is long. Designs so made are more suitable for textures in which the number of ends per inch exceeds the number of picks per inch, as they then lend an appearance of squareness of texture that does not really exist. For the same reason, designs in which one repeat of the weave is longer than it is wide are more suitable for textures in which the number of picks per inch exceeds the number of ends per inch.

Fig. 6 shows a honeycomb weave in which the sunken squares are larger than the raised squares. Two repeats each way are shown. Fig. 7 shows a modified honeycomb weave. Fig. 8 illustrates a fancy suspender webbing in which a honeycomb weave is incorporated. Fig. 9 is one of a class of weaves which will produce a honeycomb effect, but such weaves are not in themselves true honeycombs.

Combination Plain Weaves

In combining the plain weave with the double plain weave to produce novelty effects, the method employed will depend greatly upon the color arrangement of the warp and filling and the effect desired. But in any case the transition from one interlacing to the other should

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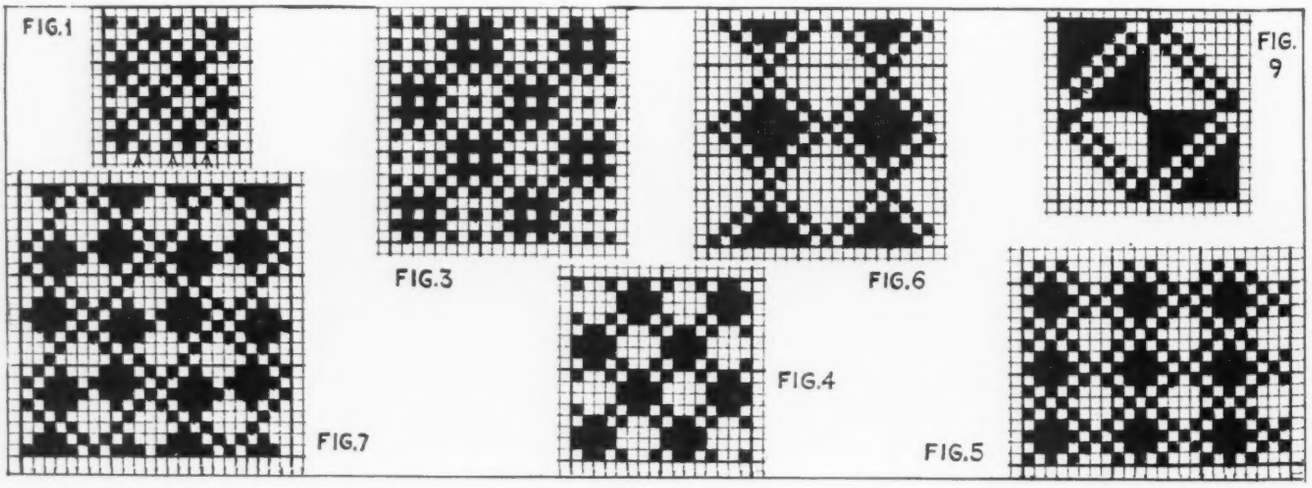
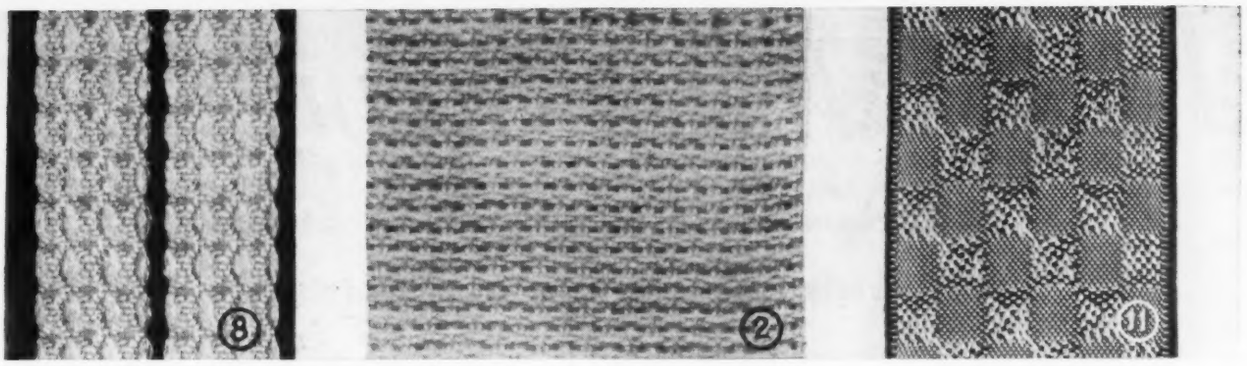




be effected in such a manner that the least disruption will occur.

Fig. 10 shows one method of combining the plain weave and the double plain weave. One repeat each way is shown. Both warp and filling are intended to be a solid color.

Fig. 11 illustrates a narrow fabric in which the face has been ornamented by a combination of plain and double plain weave similar to the arrangement shown in Fig. 10. The warp is white, the filling is black.

Novel effects will often result where two or more colors are employed in both warp and filling. In such cases the best color arrangement for both warp and filling is two and two.

Fig. 12 is designed to produce a solid colored square in the upper left-hand block, and a solid square of another color in the lower right-hand block. The color arrangements of both warp and filling are intended to be two and two, as indicated in the design.

Through-and-Through or Reform

Through-and-through, or "reform," weaves may be developed from almost any of the foundation weaves. They are constructed by causing part of the ends to alternate with the remaining ends in forming the floats on the face of the fabric in such a manner that the appearance of the original weave will be preserved. In narrow goods these weaves are valuable for increasing the thickness or weight of a fabric without necessitating an extra warp.

If the interlacing from which the through-and-through weave is to be developed is an ordinary twill weave in which the twill line raises one pick on each successive thread, the number of picks in one repeat of the resulting weave will be one more or one less than twice the sum of the twill from which the through-and-through weave is to be derived. If the ends are arranged one and one, the number of ends in one repeat will be the same as the number of picks. Figs. 13, 14 and 15 illustrate how a through-and-through weave is constructed.

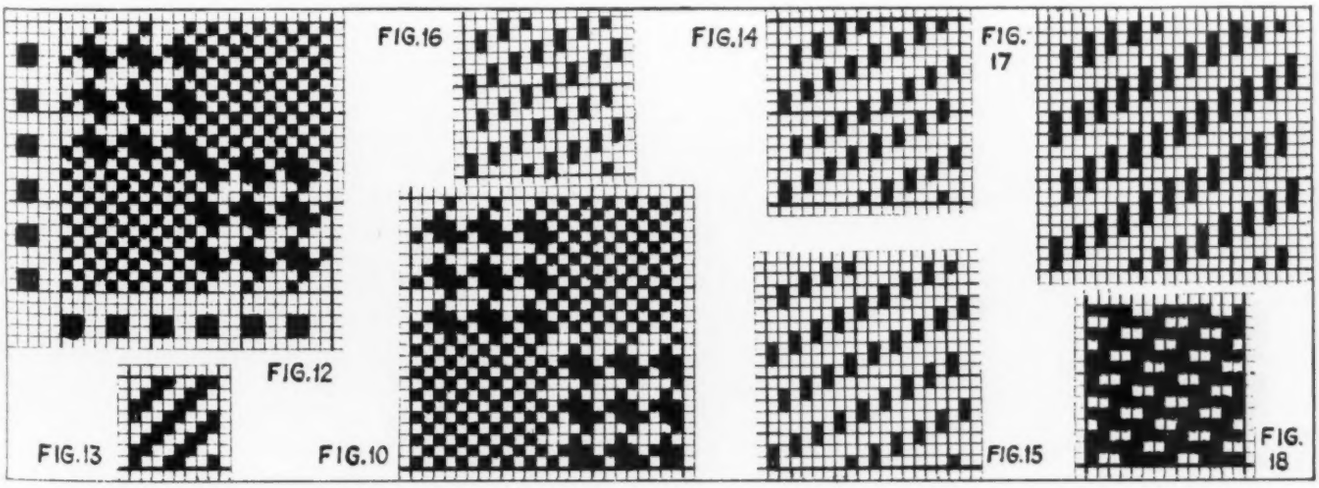
Fig. 13 shows two repeats each way of a regular 2/2 twill weave.

Fig. 14 shows the effect of placing the 2/2 regular twill on every odd-numbered end in a design but omitting the second and fourth raiser floats, and then raising the even-numbered ends to form floats next to the spaces where the odd-numbered ends would normally have been raised. This arrangement, however, as will be observed, results in unevenly-spaced twill lines. To overcome this apparent defect the sinker float on each end must either be increased, or reduced, by one pick. If increased by one pick, the result will be a nine-pick 2/2 through-and-through weave, as shown in Fig. 15. Two repeats each way are shown in the completed design. If the sinker float is reduced by one pick, the result will be a seven-pick 2/2 through-and-through weave, as shown in Fig. 16. Two repeats each way are shown.

Fig. 17 represents two repeats each way of the 11-pick 3/3 through-and-through weave.

In addition to the one-and-one arrangement, through-and-through weaves may be arranged two and one, and three and one. With the two-and-one arrangement the selected weave is placed on two ends and then one end is skipped; and with the three-and-one arrangement the original weave is placed on three ends and then one end is skipped.

Through-and-through weaves may also be developed fillingwise, though such weaves are seldom employed in narrow fabrics. Fig. 18 shows two repeats each way of a filling-effect through-and-through weave. The 2/2 twill is used for the foundation, and the weave is designed to repeat on seven ends and seven picks.



Rayon Warp Sizing . . .

Materials and methods which minimize difficulties in weaving and finishing

By Hector C. Borghetty

◆ *The following discussion is an amplification of a paper prepared for the conference on warp sizing, held last May, by the United States Institute for Textile Research, and presented by title only. This article, which has not been published previously, has been released to* TEXTILE WORLD *through the courtesy of the Institute.*

IN THE early days of rayon manufacture it was thought possible to size the individual threads. This procedure was found impractical, however, and today warp sizing is the only important method. Improvements which have occurred in recent years—both in machinery and methods—make it possible to obtain very satisfactory results, providing certain important principles are carefully observed. The chief factors to be considered are: (1) type of yarn to be sized; (2) sizing ingredients to be used; (3) temperature of application of the size; (4) drying temperature; and (5) speed and tension of the warp.

Viscose rayon is characterized by its excellent wetting-out properties. Because of this, it takes on a very even size film. The best sizing temperature for viscose is between 130 and 145° F. Cuprammonium yarn also has good wetting-out properties, although somewhat inferior to those of viscose; therefore, when an extra heavy size coating is desired, the size solution should be more concentrated than for viscose. The most suitable sizing temperature is also around 140° F. Cellulose acetate yarn is different chemically and physically from the other two types, and its wetting-out properties are poor. However, excellent results can be obtained if the sizing temperature is maintained around 160° F., suitable sizing solutions of high concentration are used, and maximum care is exercised during drying.

Selection of Sizing Ingredients

A suitable sizing compound should have two characteristics: (1) It must produce a yarn with good weaving qualities; and (2) it must be readily removable in the subsequent finishing operations, without damage to the fiber. The sizes which meet these requirements are, principally, converted starches, gelatin, glues, natural gums, and softeners.

Converted starches, such as dextrin and British gum, are manufactured from starches and represent the intermediate compounds between starch and sugar. They are water-soluble and, therefore, are easy to remove from the yarn. Although they have lost a considerable degree of the firm, adhesive properties of starch, they have acquired softness, as well as solubility. Converted starches are not generally used alone as sizes, but in conjunction with a good binding compound, like gelatin, they give good results. Converted starches vary in regard to color, solubility, and adhesive quality. Therefore, when a satisfactory product is obtained, it is not advisable to change the source of supply or the specific type of converted starch until exhaustive tests have shown that the viscosity, solubility, and adhesiveness of the product which it is proposed to substitute are satisfactory.

Gelatin and glues are capable of giving a thin, even, and tenacious film. This film would be ideal, were it not for the fact that it is a little too brittle. Therefore, gelatin or glues should be used in conjunction with a softening agent, which will give a more elastic film. At times, gelatin may be found difficult to dissolve, but any trouble can be avoided by allowing the gelatin to soak for a few hours in cold water until it swells and passes into solution.

Natural gums, such as tragacanth, karaya, arabic, and senegal, are suitable sizes for rayon. They give a good tough coating when they are used in conjunction with a softener or with a converted starch. As a rule, size coatings which are produced with the natural gums are not as easily removable as those obtained with gelatin or glue.

Softeners, such as sulphonated oils and glycerin, are not true sizes, but are auxiliary products which are of value because of their solubility and penetrating and anti-sticking qualities. They help also to prevent variations in the sized yarn caused by atmospheric changes. Used together with gelatin, glues, and gums, the softeners aid in avoiding the clustering together of the threads and the sticking of the warp to the dry cans.

The Sizing Situation

It is necessary to maintain the size at a constant temperature throughout the entire run; otherwise a variation in the viscosity and penetrating power of the solution will result. Automatic temperature controls, which insure that the temperature of the size box remains equal to that of the mixing tub, are highly recommended. Kettles used for the preparation of the size should not be made of copper, brass, or iron. Copper and brass in contact with acid size mixtures are stained green; iron gives rust spots. Wooden kettles are suitable, while parts, fittings, and pipes which come in contact with the sizing solution should be of a corrosion-resisting alloy, such as stainless steel.

The size solution must not be too much on the acid side. Acid sizes react with the copper drying cans, causing green discolorations on the sized warp.

It is advisable to allow the warp to enter the sizing

The author wishes to express his thanks to J. Zaparanick, of Jewett City, Conn., who has collaborated with him in the preparation of this article, and to the National Oil Products Co., Harrison, N. J., for certain of the data included therein.

trough at a downward angle. If this is done, the size cannot run on to the dry warp and cause uneven tension or irregularities. Penetration of the size is assisted by proper arrangement of the quetsch rolls. This is of great importance, especially for acetate yarn. Soft quetsch rolls, which permit a longer contact under pressure, are helpful. The size pick-up roll can be covered with a few layers of cloth, thus allowing it to hold the solution and avoid dry places, which otherwise would result after stoppages.

Drying Temperature

The drying temperature and the speed and tension of the warp vary from mill to mill, according to the construction of the machine, the type and viscosity of the sizing solution, the amount of coating desired, the denier of the yarn, and the sley.

There are various types of equipment used, including the modified cotton slasher, the multi-cylinder rayon sizer, and machines which utilize hot air for drying. Some gray mills making warps of not too fine a denier and sley find it convenient to use the modified cotton slasher, thus obtaining flexibility of production. The large cylinder used in this machine permits slow drying.

With the multi-cylinder rayon sizer, the drying temperature should be as low as is compatible with adequate production. It is important not to bake the sized warp to the dry cans. In drying viscose and cuprammonium warps, the first cylinder should be at a lower temperature (140° F. is sufficient) than the following ones, which can be from 180 to 200°. Acetate warps are run very satisfactorily on the five-cylinder machine at a temperature barely sufficient to dry. The first cylinder can be kept cooler than the rest by covering it with a cloth, which should be changed from time to time. This cloth allows the threads to leave the cylinder without sticking to one another or to the cans.

The warp should be dried thoroughly and then conditioned before it is wound on the beam. If the yarn is too hot, it is apt to absorb moisture after being wound on the beam and thus cause a change in warp tension on the loom. This, in turn, will result in an uneven cloth. Effective conditioning can be obtained by inserting an air-cooled, perforated cylinder between the last dry can and the beam. On the other hand, if the warp leaves the drying cans still damp, it has a tendency to continue to dry and thus contract and create uneven tension. Running speeds have not yet been standardized, varying from 5 to 30 yd. per minute. The steam pressure of the cans averages between 5 and 10 lb.

A rayon slasher, which eliminates the use of cans and permits drying of the warps with hot-air currents at a comparatively low temperature, was introduced a few months ago and is being watched with interest. Among the advantages claimed for this type of machine are the elimination of baking hazards and the production of an unflattened sized yarn, free from tension variations and of high tensile strength.

It has been found helpful at times to split the warp as it leaves the last drying can; that is, a rod is so placed as to lift every second thread before it passes to the loom beam. This separates any threads that may have clustered together. A white tape should be placed across the loom beam at intervals of 30 to 40 yd. in order to aid the weaver in finding broken ends. One point which must not be overlooked is the exact alignment of the delivery beam and the receiving beam.

Warps should be inspected carefully during their preparation. If there are tight or loose ends, they will show up badly in the finished fabric, even though they seem to be passable in the gray goods. Tight ends are likely to break, causing trouble on the sizer or at the loom.

Warp Tension

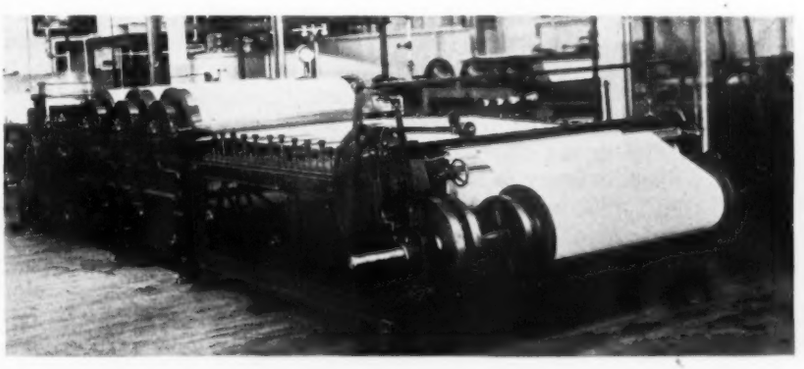
Uneven tension of the warp is a fault which causes much trouble, both in the gray mill and the finishing plant. In the dry state, rayon can be stretched easily, but it returns to its original length when the tension is released in successive finishing operations. The maximum elongation that can take place without straining the fiber seems to be about 9 to 11% for viscose and cuprammonium; and 6 to 7% for acetate. The practical limits, however, should be maintained at least one-third lower than these figures. When this limit is passed, the fiber is said to be under stress, and it tends to lose its elastic quality.

In the wet state rayon elongates very readily, returning to its original length during drying. However, if too much tension is applied, it is easily possible to pass the elastic limit, and breakage or stress is liable to result. It must be remembered that all rayons lose considerably in strength when wet. It follows naturally that any elongation which results by immersing the warp in the size should be taken care of, but that no excessive tension should be applied while the yarn is wet. When the warp has been dried (that is, when it has left the last dry can), the yarn is stronger, and the tension can be increased. It is necessary to wind up under tension to insure a good, compact beam, which must be of equal firmness throughout.

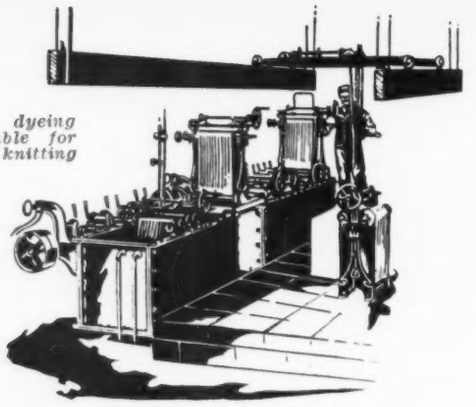
Avoid Overstretching

Part of the total tension desired should be applied between the delivery beam and the pick-up roll before the warp enters the sizing solution; part should be applied between the quetsch roll and the first drying can; and the remainder, between the last drying can and the loom beam. An excessive part of the tension should not be applied during the last phase; otherwise the size film is liable to crack.

Instances have been reported where the warps, either unknowingly or out of desire for greater yardage, have been stretched beyond the elastic limit of the fiber. In these cases, the threads were under strain and, besides being tender, they could no longer return to their original position. Such warps dye irregularly and give a streakiness throughout the finished cloth.



By Raffaele Sansone



Modified skein dyeing machine suitable for preshrinking knitting yarns.

Pretreatment of yarn and other methods for producing

Unshrinkable Knit Goods

PERHAPS the most serious disadvantage of knit goods manufactured from woolen or worsted yarns is the tendency of the fabrics or garments made therefrom to shrink upon washing. Several processes have been introduced to enable the production of non-shrinkable wool goods, but few, if any, of them are entirely satisfactory in the case of knitted fabrics. This is due largely to the fact the yarn is free to shrink in every direction without meeting nearly as great a resistance as the frequent crossing of warp and filling threads sets up in woven fabrics. For the same reason, knit goods usually shrink more quickly and less uniformly than do woven materials. European textile manufacturers have given considerable attention to this problem, and have experimented along a number of different lines. In this article will be outlined some of the various methods now employed in the attempt to reduce or to eliminate shrinkage. It is not the intention of the writer to describe any of these procedures in detail, but merely to show how the problem is being approached by companies with which he is familiar and thus to stimulate further research by other textile manufacturers.

One way in which knitters are endeavoring to minimize shrinkage is by modifying the stitch construction so that the yarn is prevented from moving as easily. This of itself does not entirely eliminate shrinkage, but is well worth further investigation, particularly for use in conjunction with other methods. In working out a modified stitch, one should make certain that it does not result in a fabric which is undesirably thick, hard, or unpliable.

Decatizing and fulling are both employed in the finishing of knit goods to reduce shrinkage. All finishers are familiar with the effects obtained by these processes, and further comment on them is unnecessary.

Many finishers are acquainted also with the chlorination of wool, although this treatment is not used as widely as might be expected. It is generally known that, in addition to its other effects, chlorination renders the wool less liable to shrink.

The following procedure is typical of those followed when wool knit goods are subjected to the chlorinating treatment in an effort to reduce their tendency to shrink: The goods are worked for 5 to 10 min. in a bath containing ¼ gal. of 66° Bé. sulphuric acid (or ¾ gal. of 20° Bé. hydrochloric acid) to 100 gal. of water. They are then transferred to a second 100-gal. bath containing 20 gal. of 1° Bé. sodium hypochlorite and ¼ gal. of sulphuric acid; worked for 10 min. out of contact with the air; rinsed with cold water; again soured with sulphuric or hydrochloric acid; rinsed; treated in a bath containing sodium bisulphite or another anti-chlor; given a final rinse with cold water; extracted; and dried at a moderate temperature.

A method which is not generally employed, but which is quite efficacious, consists of preshrinking the yarn in skein form before it is used for knitting. This treatment can be carried out in a modified skein dyeing machine, such as that shown in the accompanying illustration. With this machine, for example, the procedure is as follows: The yarn is placed on the skein holders, immersed in a hot bath in the first tank, which contains 1 to 3% of soap and a small amount of sodium silicate, and revolved in this solution until shrinkage is complete. The skein holders are so designed that the tension on the yarn can be adjusted by means of a handwheel, thus allowing the degree and speed of shrinkage to be controlled. When shrinkage is complete, the skein holders are raised from the bath, and the yarn is permitted to drain. The yarn holders are then moved to the second tank, and the yarn is rinsed well with hot and then with cold water.

On the whole, this preshrinking treatment with soap and sodium silicate gives very satisfactory results. The degree of shrinkage, since it is controllable, can be varied according to the particular type of fabric which one intends to knit; the wool suffers little if any damage; and the process is relatively inexpensive.

It is very possible that yarn could be chlorinated in the same or similar types of equipment.

Although sheep are often exposed to wet and rain, no shrinkage of the wool occurs while it is on the animals' backs. However, by the time the wool has passed through all the operations required to convert it into a finished fabric, practically all of the substances have been removed which nature provided to render it waterproof and protect it from damage from various sources. Recently, some thought has been given to the possibility of bleaching, dyeing, and finishing wool in such a manner as to leave on the finished material a protective agent having certain of the properties of the substances originally supplied by nature. Work in this direction has not yet progressed very far. Theoretically, at least, it appears that further study is well justified, and that finishing processes could be developed which will enable the production of wool knit goods which, in addition to being unshrinkable, will be warmer and more durable.

Loom Thread Separators

Reduce silk and rayon fabric defects

By Otto W. Bitzenhofer

OF THE defects encountered in the manufacture of silk and rayon fabrics, the most troublesome, perhaps, are filling bars in crepes and shiny stripes or thin places in the warp of various constructions. In many instances the weaver, by the use of thread separators for the warp and filling, can prevent these faults or can, at least, lessen the number and size of the defects.

Filling bars, which vary in length from ½ in. to several inches, are due to the presence of double picks caused by the twining together of the S- and Z-twist* crepe threads used in filling. That is, the two yarns meet at the side of the loom boxes and twine about one another. Then, when one shuttle is traversing the race plate, the filling from the other shuttle is also drawn into the cloth to make a double pick. This fault can be avoided by the use of either of two simple devices which will be described below.

The first device (Fig. 1) is a small metal yarn separator, which is placed at the side of the shuttle change box. It is attached with a screw or bolt to the front edge of the lay about ⅛ in. above the race plate. The separator catches the filling threads from the upper and lower boxes and holds them in their proper positions.

If desired, a small bunch of wadding or cotton yarn pasted onto a piece of cardboard can be substituted for the metal thread separator. The cardboard is bent to a rectangular shape and is attached to the loom at the same place as is the metal separator. In this way, the filling yarn from the lower box, for example, is caught on the wadding while the upper shuttle is running.

Whichever device is used, it is advisable to have a fairly strong tension on the yarn in the shuttle. Likewise, the crêpe yarns should be conditioned by being placed in moist boxes, or wrapped in damp cloths, and left until just before they are needed for weaving.

Weavers of rayon fabrics frequently have to suffer because of negligence on the part of warper operatives and beaming girls. It is well known that the warp threads should run straight and free from tangles from the warp beam, and through the lease rods, harness, and reed. In many mills the actual conditions are quite different. Almost every warp will be found to contain some threads which are not in the proper order. At the opening of the harnesses, for instance, certain of these threads which should run into the lower shed will run into the upper one. Furthermore, shiny stripes or thin places in the fabric, bad selvages, broken warp threads, or other defects will occur. At times the thread which is out of its proper order may tangle with several other threads, causing them all to break. If the tangle is not too bad, use of the warp-thread separator shown in Fig. 2 will enable one to proceed with the weaving. The warp is untangled as well as possible, and the separator is placed close to the warp beam. The paper plate *A* rests on the warp threads, and an empty bobbin *D* hangs down between the threads *B*. If the tangling is quite bad, it is advisable to place a few threads *C* to the left and right on the plate.

In winding the warps on the loom beam, the operatives should insert cross strings at 50-yd. intervals. Usually the weavers dislike to have this done, as it necessitates a daily stoppage of the loom of 5 to 10 min. to bring the threads into proper order. As a result, the weavers pull out the cross strings before proper control of the warp has taken place. However, this is false economy of time, as the number of short loom stops which usually occur total to a much greater delay than is necessary to bring the warp under proper control in the first place. Further, if the cross strings are used correctly, and a tangle occurs, the warp-thread separator needs to be left in place only until the next cross string turns up.

In the event that a few of the tangled threads get broken, they can be tied with the weaver's knot. If a large number of threads get tangled, and the warp-thread separator cannot be used, it will be necessary to break those which are tangled the worst and connect them to reserve-thread spools which hang on a spring above the warp. On each of these spools is placed a small iron weight, which serves to act on the spool as a brake.

*A yarn or cord has S-twist if, when held in a vertical position, the spirals conform in slope to the central portion of the letter "S," and Z-twist if the spirals conform in slope to the central portion of the letter "Z." —Definition proposed by Com. D-13, A.S.T.M.

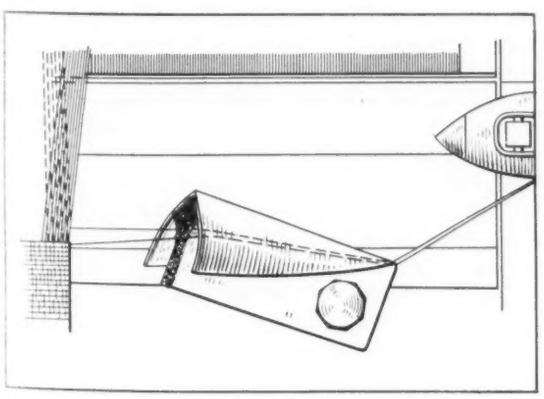


Fig. 1 (left) Metallic separator for filling threads

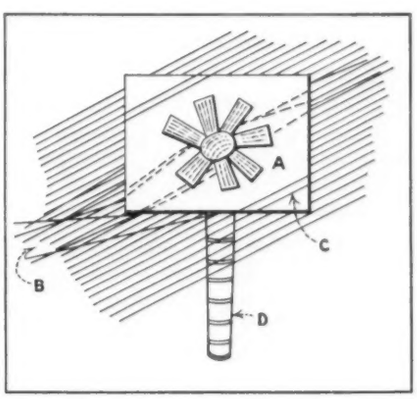


Fig. 2 (right) Device for separating warp threads

Pyroxylin Coatings . . .

Preparation of nitrocellulose solutions for application to cotton and rayon fabrics

By John T. Gibbons
Zoch-Gibbons & Co., New York

EACH year for the last decade a number of new fields have been opened up for the use of artificial leather. This fact has led manufacturers and finishers of cotton and rayon fabrics to explore the possibilities in the use of pyroxylin. These men have found that the manufacture of artificial leather is a separate industry, requiring special machinery which they did not have. They found also that artificial leather products require special selling agents and methods, and that their own selling forces do not have the special knowledge required to do this work well. But they did learn that there is a market for other types of pyroxylin-coated materials, in the production of which they could utilize much of the finishing machinery which they were already employing. These products are represented by such items as waterproof draperies, shower-bath curtains, coverings for outdoor furniture, and waterproof coverings for suitcases. Several concerns have started the manufacture of these products in a small way and have made considerable progress to date. In this article we shall discuss the materials which are used in the manufacture of this type textiles, and in a subsequent article we shall describe the way in which they are applied to the fabrics.

The coating which is applied to the fabrics consists of a mixture of pyroxylin, which is the bonding and waterproofing agent; pigments or color lakes to provide the color; plasticizers to soften the film; and sometimes loading materials—such as talc—to lower the cost of the compound, and gums to brighten the film and give it adhesion. Most textile men are familiar with the pigments, color lakes, and fillers, as these materials are used constantly in the textile field; but knowledge of the nature and properties of pyroxylin and the plasticizers that are used with it is not so widespread.

Pyroxylin is a solution of nitrocellulose in an organic solvent. Nitrocellulose, when dry, looks exactly like the cotton linters from which it is made. However, since dry nitrocellulose is very inflammable, it is wet with alcohol and shipped in this condition. The steel drums in which it is shipped contain 70% of dry nitrocellulose and 30% of alcohol by weight. This mixture of alcohol and nitrocellulose is then dissolved in an organic solvent or a mixture of them, such as ethyl acetate, butyl acetate, or a mixture of alcohol and one or more solvents. The nitrocellulose dissolves readily in these solvents and forms a clear, transparent mass.

This solution is called by several names, such as pyroxylin, dope, lacquer, nitrocellulose solution, etc., all of which refer to the one material.

The viscosity of the nitrocellulose is an important characteristic. This is governed by the methods used in the manufacture of the nitrocellulose. The viscosity ranges from $\frac{1}{2}$ to over 200 sec. Viscosity is determined by dissolving the nitrocellulose in a solvent and allowing a $\frac{1}{4}$-in. steel ball to fall a distance of 10 in. in a glass graduate which is filled with the solution at 25° C. The time necessary for the ball to fall this distance is the viscosity in seconds.

A 25% solution of a nitrocellulose which has a viscosity of 25 sec. is a very heavy paste when it is cold. A 25% solution of a nitrocellulose which has a viscosity of $\frac{1}{2}$ sec. is a fairly liquid mass, which, when cold, will flow easily through a 1-in. molasses cock. The manufacturers of nitrocellulose can supply any viscosity needed by mixing materials of several viscosities to get the product desired. These $\frac{1}{2}$- and 25-sec. solutions are the ones generally used, and most jobs can be taken care of with them. The more fluid one, the $\frac{1}{2}$-sec. solution, is used where penetration of the fabric is required; and the 25-sec. solution, where a surface coating is desired.

The textile manufacturer can buy the nitrocellulose and solvents and make his own solutions. In this way he can get a greater variety of mixes with a smaller stock of material. He also can save money, unless he is operating on a very small scale, in which case it is wise to buy the solutions already prepared. The companies supplying the nitrocellulose solutions buy their raw materials in large quantities at a considerable discount, so that they are able to supply solutions to a small manufacturer at a slight advance over what it would cost him to prepare his own solutions.

Use of Plasticizers

If a solution of pyroxylin is spread on a fabric, and the solvent is evaporated by applying heat, a clear, transparent film is obtained. Since this film is too stiff and would make the fabric boardy, a plasticizer is added to the pyroxylin to render the film soft and flexible. Castor oil was one of the first plasticizers used and is one of the best from the standpoint of cost and effectiveness. Later dibutyl phthalate, diamyl phthalate, tricresyl phosphate, and a host of others were introduced. The four mentioned are the ones used for most purposes. A good plasticizer is one that will soften the film, stay in the film during its life, and will not harden through ageing, evaporate, or sweat.

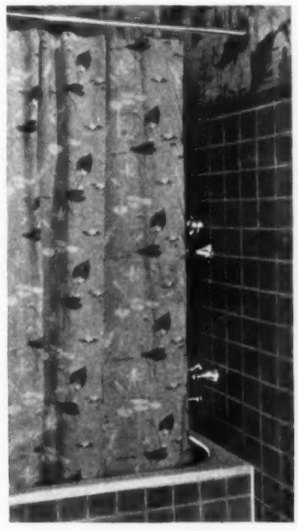
There are limits to the amount of plasticizer which can be used, as an excess will make the film tacky and soft and lower the tensile strength. More plasticizer can be used with a pigmented film than with a clear one, as the pigments present dry the film and absorb some of the plasticizer. About three times the weight of the dry nitrocellulose present is the upper limit of plasticizer that can be employed safely. An excess of castor oil will make the film greasy, as the castor oil sweats out of the film when an excess is present. Tricresyl phosphate is a solvent for the nitrocellulose and has the advantage of being non-inflammable. For this reason, it is used for

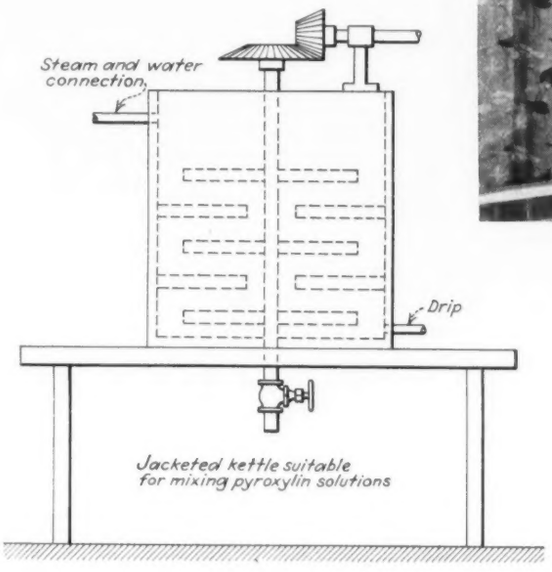
purposes where this property is valuable, such as the coating of window draperies and the like.

Gums and resins are used in conjunction with pyroxylin to give the films brilliance and luster. They are incorporated in the mixture by first dissolving them in a solvent and adding the solution to the pyroxylin. They also have the property of making the pyroxylin films more adhesive. The ones commonly employed are dammar, copal, and shellac. On a basis of price and satisfactory results dammar is the one generally used. The amount used is based on the amount of dry nitrocellulose present in the mix, and rarely exceeds the weight of the nitrocellulose. An excess of gum will render the film hard and brittle.

A number of synthetic resins have been introduced in the last few years, which give satisfactory results. However, the price of these materials is higher than that of the natural gums, and they have not been used to a great extent.

Pigments are used with the pyroxylin primarily to color the film. In addition, some pigments are used as extenders. White





is secured through the use of zinc oxide, zinc sulphate, lithopone, titanium dioxide, etc. Carbon black, lamp black, and nigrosine, are used for blacks. Prussian blue and ultramarine blue are used for blue colors. Iron hydrate is used to secure buff or ecru. Red oxides of iron are used for reds. Chrome yellow is used for yellows. Greens are generally made from mixtures of the foregoing colors, although the more expensive chrome green is used to some extent. In addition to the pigments, lake colors are employed, especially in lacquers, to get brighter shades, as most of the pigment colors dull the brilliancy of the pyroxylin film. This tendency is overcome also by using a clear coat of pyroxylin on top of a pigment coat. The pigments are ground in castor oil or some other medium by means of a three-roll steel mill, a stone mill, or a pebble mill. It is generally believed that the three-roll mill gives the greatest production for this type of work.

Mixing the Compound

The oil-pigment mixture, the solution of gums, any additional plasticizers, and solvents are added to the pyroxylin, and the whole mass is mixed in a tank which has a suitable mixing apparatus. Mixing is continued until a homogeneous mass is obtained. The mixture is then ready to apply to the fabric or other base.

There are several types of mixers which handle nitrocellulose solutions satisfactorily. As can be seen from the accompanying illustration, they consist of a jacketed kettle, of a capacity from 50 to 1,000 gal., and fitted with stirrers which give rapid circulation to the materials. The mixers are equipped with low-pressure steam connections to warm the materials and a water connection to cool the mass when the operation is completed. There is no strict rule for making the solution, but it is best to observe the following general directions in order to prevent lumps and to save time in the operation. The alcohol, which is used in conjunction with the solvents, is poured into the mixer and the nitrocellulose added. The mass is stirred for a few minutes with the low-pressure steam turned on. Then the solvents are added slowly, until all are in, and the plasticizers, gum solution, and pigment mixtures are added. Stirring is then continued until the whole mass is thoroughly mixed and solution has taken place. This operation takes about 30 to 45 min., depending on the size of the batch. Care should be taken not to heat the solution to over 160° F., as some of the solvents would vaporize, and excessive heat has a deteriorating effect on the nitrocellulose. Some people prefer to perform this operation at room temperature. This takes much longer, however, and in winter, with all the materials at a low temperature, it is very slow.

A typical formula for coating shower-bath curtains is as follows:

First Coat

12½ lb. 25-sec. nitrocellulose (dry)
16 lb. denatured alcohol
16 lb. toluol
31 lb. ethyl acetate
25 lb. dibutyl phthalate.

Second Coat

20 lb. 25-sec. nitrocellulose (dry)
16 lb. denatured alcohol
8 lb. toluol
34 lb. ethyl acetate
20 lb. dibutyl phthalate.
2 lb. talc mixture (talc 63⅔%, castor oil 33⅓%, ground together on mill).

The fire hazard in a properly laid out pyroxylin plant is slight. In the opinion of the author it is much less than the fire hazard in the average cotton finishing plant. It is true that nitrocellulose and its solvents are highly inflammable and must be handled with due respect for their nature. The mixers, coating machines, pulleys, shafting, belts, etc., must be thoroughly grounded. All motors and electric lights must be totally enclosed and must be of the vapor-proof type. Care should be taken to prevent sparks from static and from contact between metals. A fire extinguisher of the carbon dioxide type or the foam-producing type should be placed near each machine, and the workmen taught how to use it. Since the amount of pyroxylin on the coating machines is small, a fire can be put out almost instantly by the use of the extinguishers. It is generally supposed that the pyroxylin will explode when it catches fire, but this is not so. It burns slowly at first on the surface of the mass, and there is plenty of time to put out the fire. Cotton lint will burn more rapidly, especially if it is oil-soaked.

Release of the Kinks

From full-fashioned sinkers must be even and undisturbing to yarn

By M. C. Miller, M.E.
Manville, R. I.

◆ *In his discussion of full-fashioned selvages, Mr. Miller has now reached the point where the kinked yarn is to begin its movement off the nose of the sinkers. He outlines the various conditions which may interfere with the satisfactory carrying through of this movement. Previous articles of this series appeared in the last November, Feb. 14, June, and August issues.*

AS THE needles move downward through their No. 9 and to their No. 10 position, the sinkers recede enough to leave the kinked yarn quite free between the hooks of the needles and the throats of the sinkers, as shown in Fig. 64. In this drawing it will be noted that the loops on the beards of the needles are at various heights, brought about by the upward pulling of the fabric on the end needle, and to a limited degree on adjoining needles. It is to be noted that loops of especially tightly knitted fabric might well assume the position shown in dotted lines at *x*, Fig. 64. For this reason, it is necessary to draw the needles downward with their beards closed more than would appear necessary, in order to insure that the tips and lower crimps of the beards are moved downward to a point low enough below the top of the knock-over bits, so that loops like *x*, Fig. 64, which are about to be cast off over the closed beards will not slip off the end of the crimp of the beards as the needles move away from the press and therefore permit their beards to open.

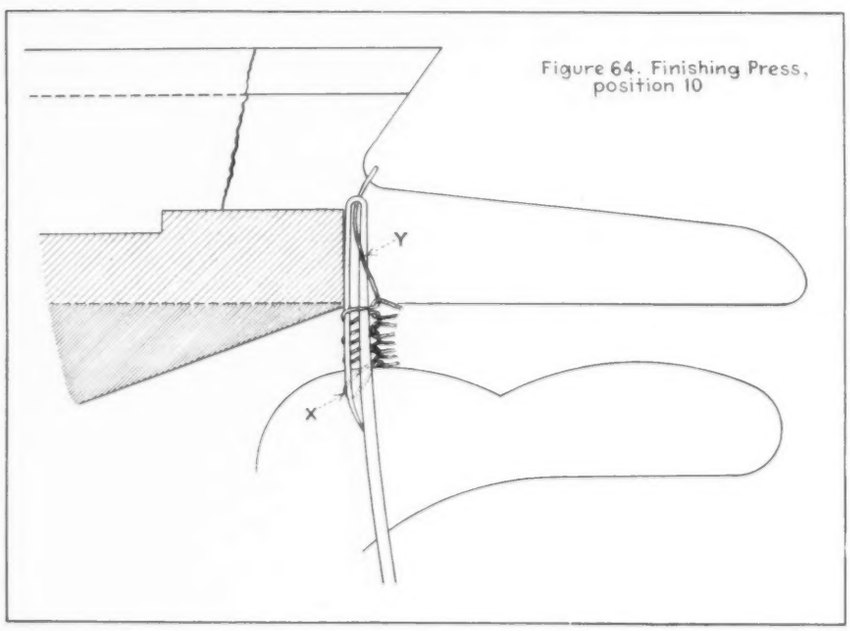


Figure 64. Finishing Press, position 10

The needles now move into their No. 11 position, as shown in Fig. 65. The movement of the needle hooks is so designed as to draw the kinks of yarn just formed snugly and yet not too tightly along the nose of the sinkers, in order to maintain relatively accurate kinks of even length. This setting should be attained when knitting the tightest fabric and therefore the shortest loops that the machine is capable of knitting, for if the machine is set at this time with other than the shortest kinks intended to be knitted, it follows that when the short kinks are formed, cutting will result. Furthermore, if the kinks are too loosely drawn over the nose of the sinkers, variation in the appearance of the loops will result through the losing of the accurately kinked lengths previously measured by the jack and dividing sinkers.

A very important position of the needles as regards evenness of the finished loop lengths is when they are in their No. 11 position, at which time, as shown in Fig. 65, the kinks in the needle hooks are free of the noses of the sinkers. Anything tending to disturb the kinks at this time will shorten or lengthen certain of them, with the result that smaller or larger loops will be formed when such kinks are finally drawn into finished form.

There are a number of conditions that can interfere with the even, undisturbed movement of the kinked yarn off the nose of the sinkers. A variation in the shape of the sinker nose is one of them. Of course, a high nose will remain in contact with the kinks longer than a low nose, and therefore the kinks at a high-nose sinker will rob yarn from adjoining kinks. An actual high, low, or varied position of the sinker nose will bring about the same condition, as will any roughness or a slightly offset or bent nose. A needle hook slightly out of line, to or from the press, will also vary the time of disengagement of the kinks from the nose of the sinkers. Anything to vary the time of the disengagement of the sinker noses and kinked yarn, even though very slight, will disturb the accurate length of kinks in the yarn and will result in what is commonly known as pattern fabric. A soft or over-tempered needle will do likewise, as a soft needle will be pulled by the fabric take-up in a direction

away from the press more readily than a higher-tempered needle. This can be readily demonstrated by over-tensioning the fabric at this portion of the knitting cycle.

The loop *y*, Fig. 65, which represents the yarn that was wrapped around the end needle and shown at *y* in Fig. 64, must result in a loose selvage loop *y* on the edge of the fabric away from the carrier, as shown in Fig. 66. Therefore the selvages will show loose loops *y* and *y'*, Fig. 66, in alternate courses. The left-hand selvage shows these loops in the courses as illustrated, while the right-hand selvage will show these loose loops in the course between the *y* and *y'* courses.

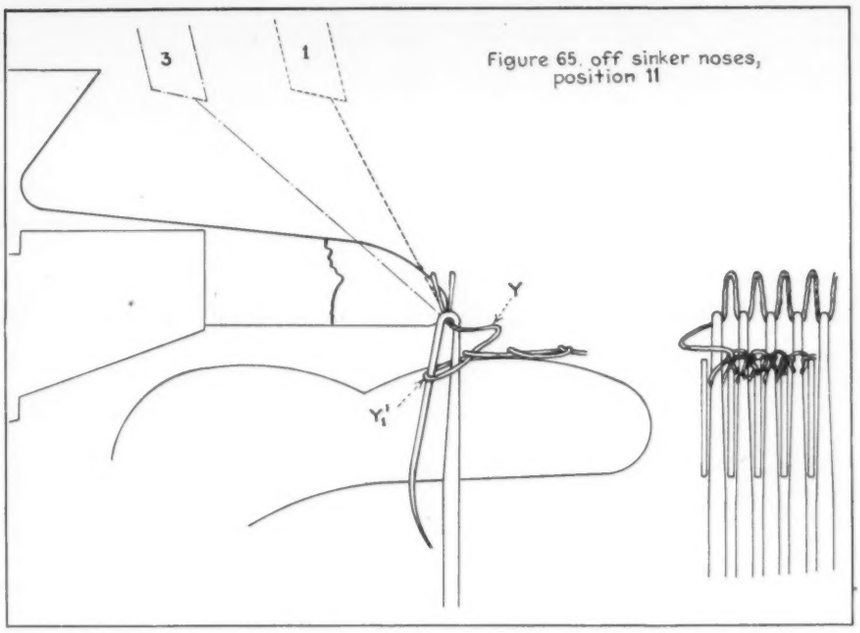


Figure 65. off sinker noses, position 11

The needles then move into their No. 12 position, as shown in Fig. 66. The line *x* in this figure represents the yarn leading from the far selvage, as the carrier, it must be remembered, is now at the far or right-hand end of the section. While it is important that the sinkers be moved in the direction toward the press edge of the machine in order to allow the kinks of yarn to fall off their noses freely, as shown in Fig. 65, it is also important to remember that the sinkers must not be withdrawn too much in this direction in relation to the position of the needle hooks in this No. 12 position. This is in order that the yarn leading from the selvage to the carrier will with certainty remain inside the outer jack sinker, as shown in Fig. 60*B* (June issue, page 94). It is particularly important, when using the carrier 1 nearest the needles, as shown in Fig. 65, to see that the distance *x'* (Fig. 66), or the distance that the yarn is inside the outer edge of the sinker noses, is no less than that shown. When using the carrier 2 or 3—as, for instance, the carrier 3 shown in Fig. 65—the *x'* distance (Fig. 66) will be greater. The yarn in any case, however, cannot be permitted to leave its position inside the nose of the outer jack sinker. If this were to happen, the yarn, upon reversal, instead of being laid over the first divider sinker 2 (Fig. 60*B*), would be laid around and over the nose of the outer jack sinker, which would greatly increase the length of the yarn *y*, Fig. 64. This is particularly the case in this instance because the end jack sinker would have to measure a kink of yarn and therefore produce an abnormally long loop *y*, Fig. 64. While this in itself might not be objectionable, it would permit the selvage loop *y'*, Fig. 65, to become so large through robbing that upon the subsequent upward movement of the needle [to be shown in Figs. 67 and 68, which will appear with the next instalment], the excessively long loop so produced might well roll to the beard-side of the needle as the needle ascends and therefore cause the selvage loop to be cast off. This is one of the reasons why it is very difficult to cause the end needles to continue to knit on commercial machines. They will have yarn kinked around them in one direction of the traverse of the carrier and lose it on the following movement.

The object of having movable knock-over bits is to lessen the time period in which the kinks of yarn, shown in Fig. 65, are unsupported. It may be seen in the element diagram (Fig. 42, Aug. 8, 1931, page 34) that the knock-over bits have assumed their high position in the needle positions 11, 12, and 13.

The needles, as they reach their No. 12 position (shown in Fig. 66), do not remeasure the kinks of yarn. They merely draw the head of the needle through the previously knitted loops and so permit the fabric take-up to commence its action of remeasuring the kinks previously formed into loops, as shown in Fig. 66. In this figure it will be noted that at this time the kinks *s* are not fully drawn through the previous course of loops.

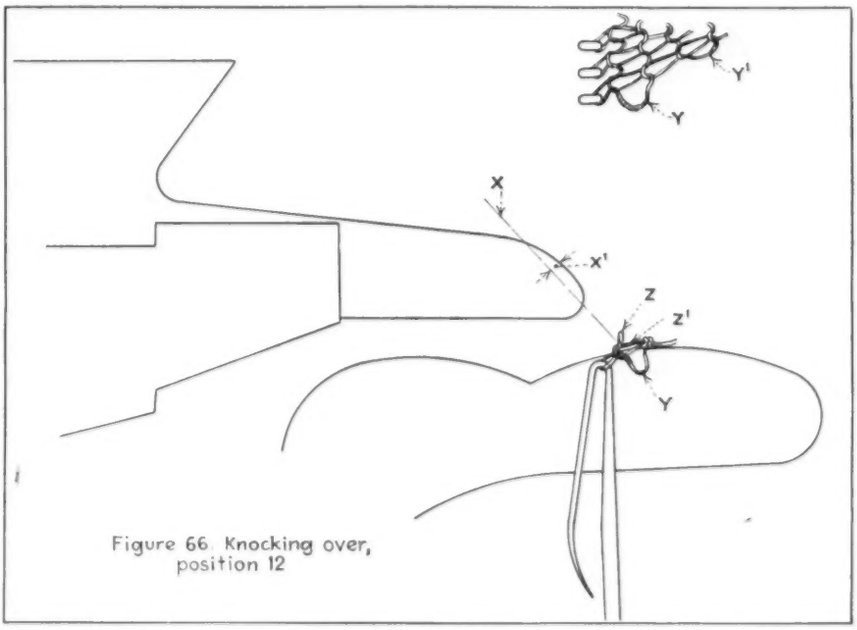
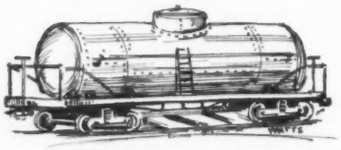


Figure 66. Knocking over, position 12

COAL or OIL



Which is the correct fuel under given conditions?

By H. E. Corl
Consulting Engineer, Philadelphia

IT IS safe to say that the owner or manager of every mill which generates steam for industrial process and power has been the subject of sales effort on the part of fuel salesmen. Each salesman has submitted arguments to show that the plant would develop the lowest fuel cost per thousand pounds of steam with the particular fuel that he has to sell. The executive is told of certain plants which have abandoned coal and gone over to oil. He is told of other plants which have used oil for a time and then turned back to coal. All of this is very confusing to the plant owner or manager. He gradually forms the opinion that something is lacking in the information gathered from these sales arguments. This, indeed, is the case. The lacking "something" is a simple statement of the conditions under which one fuel will be more economical than the other.

The determining factor in selecting a fuel is the efficiency with which it can be burned. However, when new fuel-burning equipment is to be installed in a power plant which is ten years old, the selection of the proper fuel is an entirely different problem from the selection of a fuel for a new power plant. With these two facts in mind, we can now outline the steps which the textile-mill executive must take to determine whether coal or oil is the correct fuel.

For a new plant, or for new boilers which are being added to an existing plant, the selection of a fuel presents no difficulties, providing the plant is to be designed competently from the ground up. An analysis should always be made in the form of Table I, which will show exactly what will be the total fuel cost and the cost per thousand pounds of steam for each type of fuel under consideration. This set-up also compares the fixed and operating charges and gives the total annual cost of steam.

Such an analysis was made in connection with a moderate-sized textile plant designed to generate 200,000,000 lb. of steam per year, with three different fuels available. The conditions of fuel burning for this plant were taken to be 78% efficiency for both types of coal, and 80% efficiency for Bunker C fuel oil, which are figures obtained in good average practice. Three 500-hp. boilers were to be installed, with two normally in service.

The analysis indicated that the plant should be designed for high-volatile nut and slack coal. The equipment included underfeed stokers, water walls along the ash trays, coal- and ash-handling equipment, suspended steel bunker, and weigh larry. The cost of the equipment erected and ready for service was $29,400. In actual operation, the plant averages closer to 79% efficiency than the 78% assumed in the table.

Oil-burning equipment for the plant in question would consist of burners, pump and heater sets, two 10,000-gal. oil-storage tanks, and the necessary pipe work. It would cost approximately $28,000 erected and ready for service.

Table I shows clearly the comparison between fuel oil and coal in a modern new plant where the fuel-burning efficiencies are about equal and the delivered prices of the three fuels are in the same relative order. It will be observed that the sum of the fixed charges, maintenance, and labor for a new plant of competent design or for a modernized existing plant will be about the same for any of the three fuels (average 6.78c. per 1,000 lb. steam). Therefore the comparison of the fuel costs alone really determines the fuel to be used.

While the relation of fuel prices, one to the other, as shown in Table I is maintained fairly consistently, there are times when fuels are bought at distress prices. For purposes of comparison Table II is included. Assume, for example, that a plant is installing new boilers and fuel-burning equipment and finds that at 78% efficiency there will be required 12,000 tons of coal per year. Oil can be contracted for at 3½c. per gallon, and from the table it is seen to be equivalent to coal at $6.33 per ton. However, coal can be contracted for at a delivered price of $5.40 per net ton. Then $6.33 —$5.40 = $0.93 per tons difference, and 12,000 × $0.93 = $11,160 per year difference in favor of coal.

Selection of the fuel for an existing plant, which is to be remodeled for better economy, is a far more difficult matter. While it is true that new fuel-burning equipment is to be installed, it is true also that the existing boilers with their settings are seldom found to be of modern design, and the 78 to 80% efficiency considered conservative for new equipment cannot be expected from remodeling of existing boilers and furnaces, unless some money is spent for enlarging the furnaces, installing water walls, etc. In other words, the economy to be obtained from one fuel over another is the ability of one fuel to perform with a higher efficiency under the particular conditions surrounding the existing plant.

It is generally known that in existing plants which are over ten years old and are burning coal on crude or obsolete equipment, the operating efficiency is 55%, or below. To improve such plants, the type of new fuel-burning equipment to be installed must be carefully selected.

In nearly all cases where oil is available at competitive prices, it will be found to show the greater improvement in efficiency and savings under old boilers, formerly using coal, up to a certain point. This turning point from oil to coal usually occurs with the plants which have boilers of such size and furnace volume as to per-

mit the installation of stokers to burn coal at an efficiency high enough to overcome the advantage possessed by the oil burner using smaller furnace volumes and poorly designed settings. The boiler efficiency corresponding to this turning point is at approximately 65% for coal, when compared to oil burning at 75%. In other words, if an old installation can have its coal-burning efficiency raised to 65% the economy will be equal to burning oil under the same boiler at 75% efficiency. This fuel-cost ratio seems to prevail over quite long periods of time.

A comparison between oil and coal for existing plants of the same steam-generating capacity as used in Table I is shown in Table III. In this table it is assumed that oil burners can be installed to operate at 75% efficiency, and the total yearly cost of oil is compared with the total yearly cost of coal as the firing methods are improved and the efficiency with coal rises from 50 to 75%. It will be seen that an existing coal-fired plant operating at 50% efficiency and changed to oil at 75% will save $15,576 per year when making 200,000,000 lb. of steam per year. Also it will be noted that as the coal-burning efficiency rises, the savings due to oil diminish, until at 65% for coal and 75% for oil, the fuel cost per year is virtually the same for both fuels. Above 65% the saving is in favor of coal, until at 75% for both fuels the saving in favor of coal amounts to $6,552 per year.

The figures in Table III compare the fuel only, and under certain conditions of equipment layout in existing plants there may be an additional saving with oil due to reduction of labor and ash-disposal costs, depending upon whether the old plant had been hand-fired with manual coal and ash handling or had been stoker fired with mechanical coal- and ash-handling equipment.

Take a plant of the same capacity used in Tables I and III (200,000,000 lb. steam per year) and assume that it consists of five 175-hp. horizontal return tubular boilers fired with so-called hand stokers. Such a plant would have two firemen and two coal passers per shift for each of two shifts, and probably two firemen and one coal passer for the third shift. The annual cost of labor would be about $17,420. The operating efficiency of the plant would be about 60%. Convert this plant to oil firing at 75% efficiency, and from Table III it will be seen that the saving in fuel would be $4,200 per year. The labor would be reduced from eleven men per 24 hr. to six men per 24 hr. The new labor cost would be approximately $10,920 per year. The labor saving would be $17,420 — $10,920 = $6,500 per year. If we assume that the ashes had been hauled away free of charge for their value to the hauler, there would be no saving in this item. The total saving due to changing this plant to oil would be $4,200 + $6,500 = $10,700 per year. Stated differently, the investment would pay for itself in two years.

The foregoing example would be an unusual case today, however, as a plant producing that quantity of steam would, in the proper hands, be the subject of a major revision in which two or three water-tube boilers would replace the five fire-tube boilers; the fuel analysis would then be made in accordance with Table I.

It is the "in between" plant having smaller water-tube boilers and either oil fired at present or fired with a fairly efficient type of stoker, which requires most careful analysis when comparing different fuels and different fuel-burning equipment. An analysis of such a plant should be set up as in Table I, and all items included which may be peculiar to that particular plant, as well as a competent estimate of the efficiency to be obtained by any alterations under consideration by the mill.

The greatest field for possible savings by oil is the medium-sized or small boiler plant, where total annual savings of 40% may be made. It is also possible in many cases by using oil to obtain more steam from boilers which have become too small to meet the steam demands with coal firing. Likewise, banking losses in low-load-factor plants may be greatly reduced with oil.

Table I. Steam costs with different fuels in plant generating 200,000,000 lb. of steam per year.

Items	Bunker C Oil	Low-Volatile Coal	High-Volatile Coal
Quantities:			
Steam generated per year in millions of lb.	200	200	200
Investment	$28,000	$29,400	$29,400
Fuel used per year	1,600,000 gal.	8,690 tons	9,150 tons
Unit cost of fuel delivered	3c. per gal.	$4.85 per ton	$4.22 per ton
Heat value of fuel in B.t.u per lb.	18,400	14,400	14,000
Efficiency of operation	80%	78%	78%
Annual Costs:			
Fixed Charges			
Interest 6%			
Depreciation 5%			
Insurance 1%			
12%			
Investment x0.12	$3,360	$3,528	$3,528
Fuel cost per year	$48,000	$42,146	$38,613
Maintenance:			
Stokers at 3c. per ton of coal	.....	261	275
On oil-firing equipment	210	.....	.....
Furnaces	450	400	400
Coal- and ash-handling equipment	.....	100	100
Labor:			
One fireman and helper on each of two shifts and one fireman on third shift	9,360	9,360	9,360
Total cost per year	$61,380	$55,795	$52,276
Total cost in cents per 1,000 lb. of steam	30.69	27.89	26.13
Fuel cost in cents per 1,000 lb. of steam	24.00	21.07	19.30
Fixed charges, maintenance, and labor in cents per 1,000 lb. of steam	6.69	6.82	6.83

Table II. Delivered prices of coal which are equivalent to Bunker C oil as the price of oil varies.

Oil-burning efficiency = 80%; Coal-burning efficiency = 78%

Bunker C oil at 2c. per gallon = Coal at $3.62 per net ton
Bunker C oil at 2½c. per gallon = Coal at $4.52 per net ton
Bunker C oil at 3c. per gallon = Coal at $5.43 per net ton
Bunker C oil at 3½c. per gallon = Coal at $6.33 per net ton
Bunker C oil at 4c. per gallon = Coal at $7.24 per net ton

Table III. Comparison of coal and oil for existing plants.

Based upon generating 200,000,000 lb. of steam per year

Bituminous coal delivered at $4.80 per ton; Bunker C oil delivered at 3c. per gallon

Existing plants using coal at efficiency of	50%	55%	60%	65%	70%	75%
Tons of coal used per year	13,870	12,620	11,500	10,660	9,900	9,260
Gallons of oil used per year at 75% efficiency	.....	.....	.....	.....	.....	1,700,000
Total cost of coal per year	$66,576	$60,576	$55,200	$51,168	$47,520	$44,448
Total cost of oil per year at 75% efficiency	.....	.....	.....	.....	.....	$51,000
Difference in favor of oil per year	$15,576	$9,576	$4,200	$168	.....	.....
Difference in favor of coal per year	.....	.....	.....	.....	$3,480	$6,552

The Consumer Wonders

How to judge wool fabrics—Tests show only shrinkage related to price

By Ethel L. Phelps
University of Minnesota

◆ *At the fall meeting of Committee D-13 in New York Professor Phelps reported the results of a recent study which indicated that the only consistent relationship between the quality of dress flannels and gabardines and their price is one of fabric shrinkage. Her conclusions were particularly interesting in view of the fact that at another session of the D-13 meeting H. A. Mereness, National Federation of Textiles, had declared that shrinkage, more than anything else, discloses the physical characteristics of silks and rayons.*

Incidental to her main theme Professor Phelps criticized the grab test and the present method of expressing elongation, and she made some interesting observations on the modified serigraph test. A brief abstract of her paper follows:

FOR several years a group of research workers at the textile laboratory of the Division of Home Economics, University of Minnesota, specifically interested in consumer-buying problems, studied three groups of wool fabrics; namely, dress flannels, serges, and gabardines.

As many different characteristics or physical properties of these materials were measured as was possible with the equipment available. These measurements included price per square yard, thickness, weight per square yard, number of yarns per inch, tensile strength of fabric, bursting strength, elongation of fabric under stress, shrinkage, resistance to abrasion, twist of yarns, size of yarns, tensile strength of yarns, and elongation of yarns under stress. Shrinkage was calculated for area, as well as for both the warp and filling directions.

Actually only a few significant relationships were found between price per square yard and the other factors measured. These few were scattered and different for all three groups with one exception—percentage shrinkage in area decreased with increasing price for flannels and gabardines. It must be concluded, therefore, that price, in the case of these three groups of fabrics, is not an adequate guide in selection on any basis except cost to the consumer. With this situation existing in the case of so commonly used a material as dress flannel, the consumer may well wonder on what basis any type of textile fabric is to be selected, when service and a maximum return on the investment are of prime importance.

Comparing grab strength tests with strip strength tests, tensile-strength values by the grab method were greater than corresponding strip-strength values. Greater precision was obtained with the strip test. In order to have obtained a precision of 1.5 lb., it would have been necessary to break four warp strips or 25 warpwise grab samples and six filling strips or 33 fillingwise grab samples for the flannels. For the serges, warp-wise, eleven and 84 breaks respectively for the strip and grab tests, and fillingwise, nine and 44 breaks respectively, would have been necessary. Similar figures for gabardines could not be calculated, since five of these fabrics, in the direction of the warp, consistently broke at the jaw under standard atmospheric conditions.

Is elongation under stress correctly portrayed when expressed as a percentage of the original gage length? Study of data for elongation under stress necessitated a theoretical consideration of methods for expression. If two specimens with a 3-in. gage length be stressed in a tensile-strength testing machine, and break at 60 lb. and at 90 lb. respectively, while both show a total elongation of $\frac{3}{4}$ in. at the point of rupture, it is obvious that a difference in behavior is indicated. With a uniform gage length for tensile strength testing as now recommended, it would appear that elongation would be more truly pictured were it expressed as stretch per sample per unit of load.

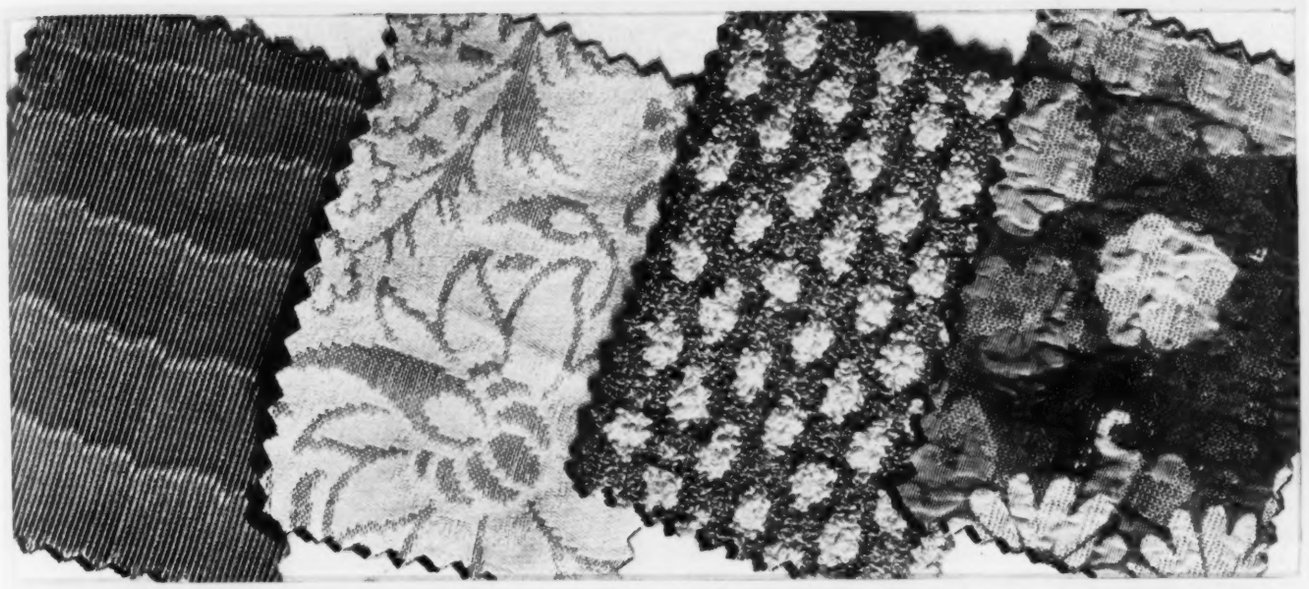
What does the modified serigraph test [first described in TEXTILE WORLD, Jan. 2, 1932, page 25], as applied to fabrics, measure? The modified serigraph test has been recommended for the measurement of strength of yarns woven into cloth if equipment for single-yarn breaks is not available.

This test was found for these materials to be a fabric rather than a yarn test and to measure the same properties as the strip test. When the values for each of these tests, modified serigraph and strip, were correlated with the values for other factors measured, significant coefficients of approximately the same degree were found for each with the same combination of factors and for the same types of fabric. In other words, with identical factors for comparison and approximately equivalent degrees of significance, these methods of testing gave identical results, except for a few scattered cases of low significance for the modified serigraph test in the direction of the filling.

Effect of Interlacing

However, for these three types of wool fabrics, single-yarn strength calculated from the modified serigraph test apparently could be used in place of single-strand tests in formulating a concept of yarn relationships. The actual magnitude of the means was not identical, the calculated mean yarn strength being approximately 50% greater than the corresponding observed values for single-strand breaks, while the 3-in. gage length of the modified serigraph test was but little more than half that used for single-strand tests—i.e., 15 centimeters—and the speed of the pulling jaw in the first case was twice that in the second case.

The percentage difference in strength of flannels, serges, and gabardines as measured by the strip and modified serigraph tests may show the effect of interlacing yarns on fabric strength.



Left to right: Moiré Souverain with metal between ribs; Crepe Rajah with the jacquard figures all in silvery metal; wool taupe with tufts flecked with gold; metal flecked matelassé. (First, second, fourth from Coudurier, Fructus & Devigne; third from Langenieux)

Crisp Fabrics

By Marie Stark
Style Consultant

in recent French openings are accentuated by lamé, cellulose film, and "horsehair"

THE outstanding fabric development resulting from the Winter openings of the great Paris dressmaking houses is the establishing of stiffer fabrics in a definite and important position in the mode. For many seasons the close student of fashion has been able to see the advance of this tendency, which has now become a full-fledged fashion that cannot escape the attention of even the most casual observer.

The use of materials with more body to them and crisper in character was found both in lines for evening clothes and in the daytime mode. Suits and coats of taffeta and faille were also in evidence. Crisp materials showed unmistakable signs of preparing to lock horns with soft weaves and finishes in the battle for supremacy. The couturiers are making clothes which demand fabrics that will stand up or stand off from the body. Closely fitted frocks buttoning down the front molding the figure to the waistline and flaring a bit in the skirt, wings and ruches jutting this way and that, collars which mount a bit on the neck (not yet actually stiffened, but looking as though they might be in their next incarnation, and requiring a stiffer fabric in order to hold their own), these are some of the interesting style developments having a direct bearing upon the character of textiles. Schiaparelli has even artificially stiffened the fronts of some of her basques of heavy wool and fur, recalling the stiffened bodices of our ancestors. Afternoon coats of stiff black velvet were sponsored and in evening fashions we have "robes-de-style" and "wraps-de-style" galore. These America already shows evidence of accepting with surprising enthusiasm.

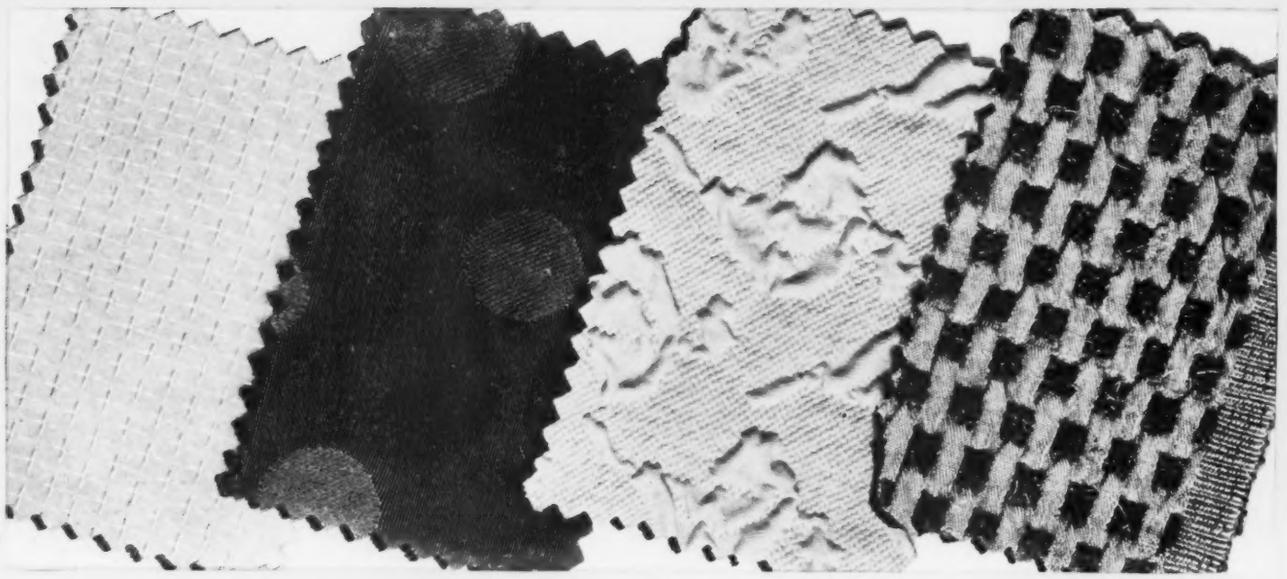
The stiffer silks include failles, taffetas, moirés, crisp satins and velvets, many lamé and lamé-shot materials, and the new Cellophane textures. Schiaparelli goes to the length of making a gown of spun glass.

No less a person than Vionnet stands sponsor for faille in a big way. It is used for evening dresses of course, evening wraps, day dresses, suits and day wraps. There are metal failles which come perhaps more correctly under the classification of lamés. Failles appear in soft as well as crisp varieties.

Moiré is another type of material which appears in both soft and crisp versions. The stiffer moirés are very handsome with pronounced water marks and, not infrequently, shot with metal. The soft moirés are apt to be dull. In satins, too, we have crisp versions as well as dull softer weaves. The types include crepe satin, frequently used on contrasting sides, reversible satin and a new material which has one satin face and one duvetyn face. Some of the stiff satins are veritable slipper-satins.

Lamés are very important among crisp textures. We have already referred to the rich and beautiful lamé taffetas, moirés and failles. These are used for formal gowns and also for the informal and very useful new evening tailleurs, which are the sort of thing that ought to have great success in America. Then there are lamés mixed with wool which Paris is sponsoring for daytime and even sports clothes. This fashion was introduced by the couturiers in the autumn of 1933.

The materials which combine wool and Cellophane are usually crisp. Sometimes the material is all one shade, contrast being between the mat wool and the glistening Cellophane; sometimes the Cellophane and the wool are different colors. Cellophane is also combined with vari-

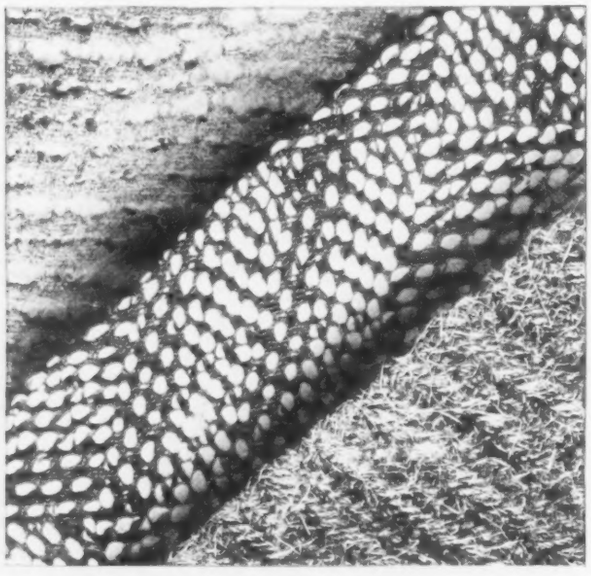


Left to right: Synthetic taffeta with gold crosses; Poult de soie façonné; a matelassé as Paris sees it; new French matelassé (Second sample from Coudurier, others from Langenieux, made by F. Colcombet et Cie.)

ous synthetic fibers or yarns instead of with wool. Cellophane fabrics are both formal and informal.

Lyons velvet in various degrees of crispness was used by many Parisian houses for both evening dresses and wraps. The velvets this season are magnificent and their vogue is outstanding. Almost endless varieties are included in both stiff and supple qualities. There are plaid velvets, plain velvets with striped and plaid borders, and novelty velvets with hairs of varying degrees of length woven into them, giving them a smart and casual distinction. These hairs may be either actual animal hairs or silk, synthetic fibers or metal threads. Faille velvet has had an extravagant success. Coudurier's two-tone velvet, "Cisellia" was used by many houses. There is moiré velvet, the last word in chic. Many exquisite evening gowns and wraps were made of it. Then there is the appealing practical uncrushable-velvet made by Coudurier after many years of experimentation and now featured by the majority of the great French houses. It is called "Velours Sans Peur" and is a combination of silk and synthetic yarn. There are also Lastex velvets and a velvet (illustrated) from Langenieux, featured by Paris in voluminous evening wraps, which is shot with wire-like synthetic horsehair which gives a new surface effect and body. There are ribbed velvets, and even a few panne velvets. Coudurier's sheer crisp "organdie" velvet is a lovely thing.

Even truly sheer textures appear in stiff versions this season. There are crisp nets, and laces stiffened by metal or Cellophane. Of course there are many supple materials on the French market, and the recent showings featured gowns made of flat crepe, crepe satin, soft faille and moiré, soft uncrushable velvet (which we have



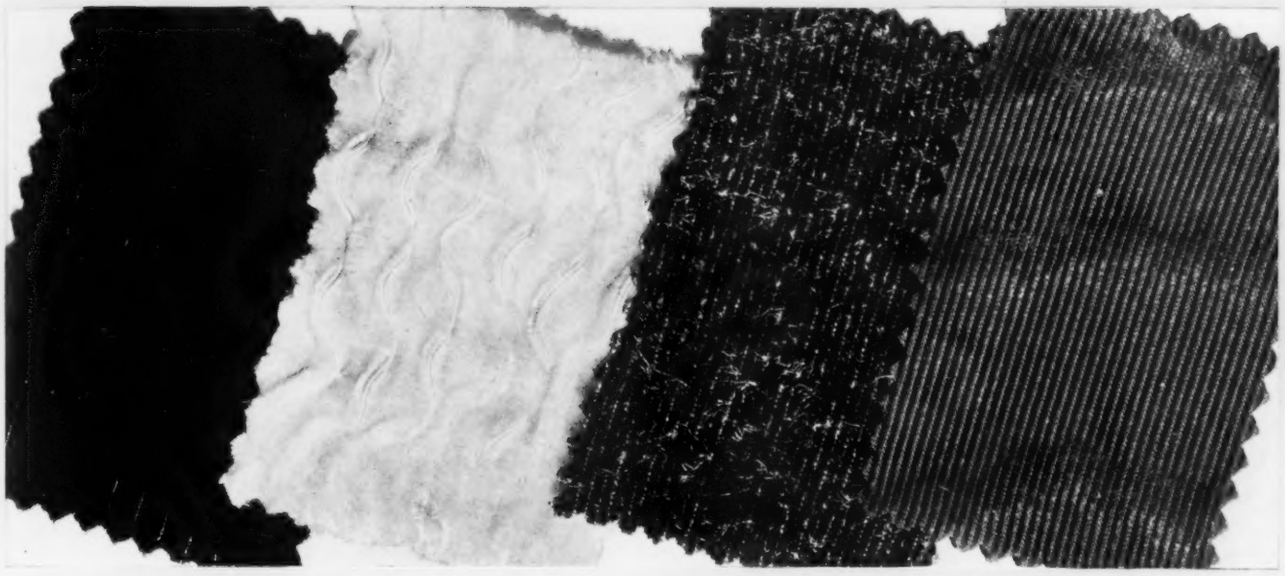
Top to bottom: nubby wool cloaking; wool and rayon; ultra-chic wool-Cellophane cloaking. (Langenieux-Colcombet.)

British Accept

By J. B. Lancashire
Leicester, England

◆ *Our brief vogue for anti-run hosiery died out in the winter of 1932-1933. The English move a little slower than we do, at least in the matter of footwear styles, and their innovations do not rise suddenly to such dizzy heights and so do not fall with such reverberating crashes. Possibly because anti-run circular hosiery has not been forced ahead of public acceptance in England, it is gradually growing more popular there. Perhaps some explanation may lie in the fact that the seamless-buying public abroad cares less than ours as to whether or not its hosiery resembles the full-fashioned stockings. Again, the acceptance may be due largely to the characteristics of the new stitches being employed in England. These are described in the accompanying article.*

FAILURE of the Schwartz and Graenz run-proof textures to achieve success in the full-fashioned hose field was due in part to the mechanical complications involved in their manufacture, combined with slowness of production and heavy loss on seconds. Undoubtedly, however, the main reason why the non-run



Left to right: Silk-back rayon velvet with Cellophane bars; artificial "horsehair" produces this wiry effect; one of the "hairy" velvets; moiré velour. (First three from Langenieux, made by F. Colcombet et Cie; fourth by Coudurier.)

already mentioned), and, not infrequently, georgette crepe.

We must not forget the importance of matelassé which is now so chic. Schiaparelli still loves it and is among the houses which show many models of it. Relief materials are smart in Paris for day or evening.

The new wools give the impression of being rougher and more casual than ever before. These rough woolens are employed for evening as well as day clothes. Cocktail ensembles are made of them. They may be just nubby or they may be cloaky weaves or they may be new varieties of the hairy woolens of which Paris shows no signs of tiring.

ot *Anti-Run*

Public takes kindly to circular hosiery of distinctive stitch

vogue was so short-lived was the unattractive appearance of the marketed products.

It is clearly not a commercial possibility to acquire a run-proof property at the expense of such valuable attributes as elasticity, transparency, stitch regularity, and textural smoothness. Conditions governing the manufacture of non-run hosiery resemble those which operate in the case of the unshrinkable finish—run-resistance, like unshrinkability, being desirable only so long as it does not too seriously detract from handle or appearance or any other feature of equal importance from a selling point of view.

In the same way that it is possible to reduce the tendency of garments to shrink without affecting their handle and color to any appreciable extent, so varying degrees of resistance to running are obtainable without sacrifice of the elastic and sheer texture. Two run-resist textures which satisfy this condition have been put on the market recently for circular hosiery.

The Mills texture, shown in Fig. 1, is the more practical and so far the more successful of the two. It is controlled by J. B. Lewis & Co., Ltd., of Nottingham. This firm has employed the texture in a new brand of hosiery sold under the trade name "Reliatex" and has also issued one or two licenses for its manufacture.

It is only by having binding loops around the ordinary loops that the texture differs from stockinette, and these binding loops can be removed without disintegrating the fabric. The run-resist property is dependent upon friction between the loops. There is no actual locking of the threads in either direction when breakage occurs.

In order to produce this texture, it is necessary to be able to hold previously formed loops on the needles when casting off new loops. The loops which normally lie behind the held loops, as in tuck work, must be intertwined with them instead. A special needle is required for this purpose. The type patented by Mills has two (or more) latches arranged tandem-fashion and set so that the upper one may close the hook in the ordinary way and the lower one cover the upper one when the latter is open.

The knitting action of the tandem-latch needle is illustrated in Fig. 2. Position 1 is the normal clearing height where the old loop is just below the spoon of the upper latch *A*. At the main feed the needle is lowered immediately after clearing, new yarn is fed into the hook, and the old loop is cast off in the ordinary way.

To manipulate such a tie-in or binding thread at the auxiliary feeder, however, the needle after clearing is first lowered slightly in order to get the old loop on the inner side of the

Typical British advertisement

lower latch *B*, as shown at 2. The needle then rises to its highest position (3), thereby clearing the old loop from the lower latch; and at this stage a new loop *Y* is formed around the needle stem between the latches. On the descent of the needle the old loop *X* passes over the two latches into the hook, while the new loop *Y* is imprisoned between the latches (position 4). Finally, by reason of the continued descent of the needle, *Y* closes the upper latch and is cast off, leaving *X* in the hook. In this way new loops are cast off without releasing the loops formed previously, thus achieving the object for which the tandem needle has been designed.

Existing makes of seamless machines, such as the Banner and Scott & Williams models, have been adapted to employ this type of needle. Two feeds are fitted. One is for ordinary knitting where the old loop is taken below the top latch and thence over it and off the needle, a new loop being formed in the hook at the same time. The other is for the introduction of the binding loop which is formed around the needle stem between the two latches after the ordinary loop has been taken below the bottom latch. During the making of heels and toes, the second feed is put out of action and the machine reverts to plain knitting.

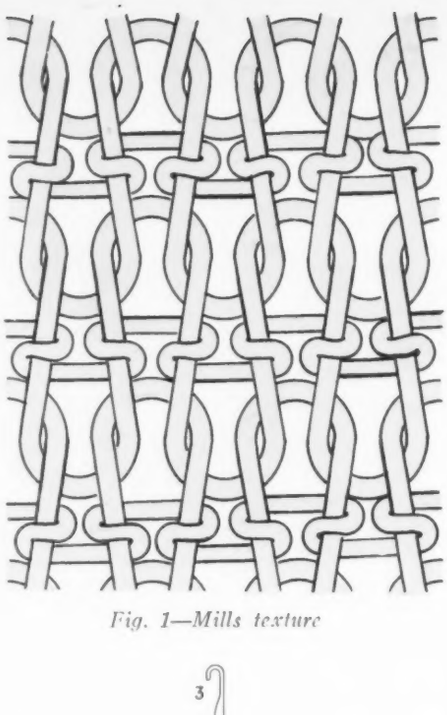


Fig. 1—Mills texture

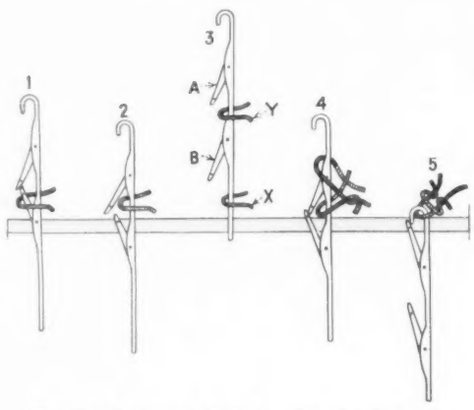


Fig. 2—Action of Mills tandem-latch needle

The second texture is a warp- and filling-knitted structure patented by Wildt, combining the true elasticity of stockinette with the run-proof attribute of warp-knitted fabric. It is definitely superior to the Mills texture in the resistance it offers to running and has an appearance almost indistinguishable from stockinette. On the other hand, there are considerably more technical difficulties associated with its manufacture; and although it is now claimed that these have all been overcome, there still remains the question of cost of production, which cannot be other than relatively high owing to the amount of labor involved in preparing the warps and to the low speed of the knitting.

At the present time the Wildt texture is produced on stationary-cylinder machines of the "George" type, built in gages up to 300x3½. The warp threads, of which there is one to every needle, are accommodated on separate bobbins carried in a creel situated overhead. They are threaded through guides which make lapping movements around the needles in advance of the feed; but by minimizing the tension on the warps, the filling thread is caused to lie on the face side of the stitches instead of at the back. This arrangement of warp and filling loops constitutes the outstanding feature of the texture, being a unique form of reverse plating. The latest improvement is to draw the warps taut after loop formation, thus insuring a uniform take-up of the threads. The filling thread, which comprises the bulk weight of the hose, may be of silk or rayon as desired; but single or two-thread silk, combining fineness with strength, is best for the warps. Heels and toes are knitted in plain stitch, as usual.

[For anti-run stitches employed by American mills see TEXTILE WORLD, April, 1933, page 57.]

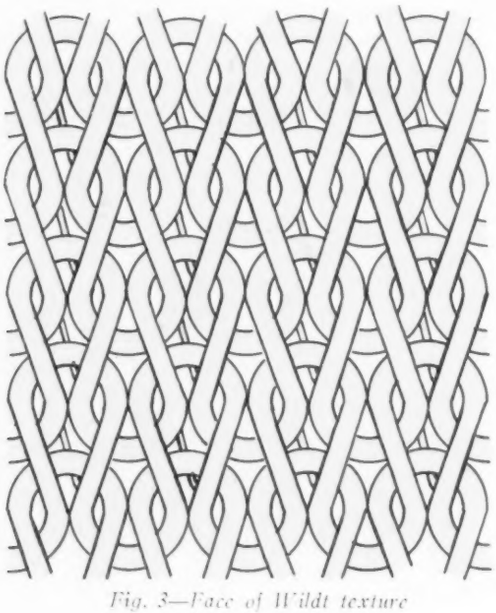


Fig. 3—Face of Wildt texture

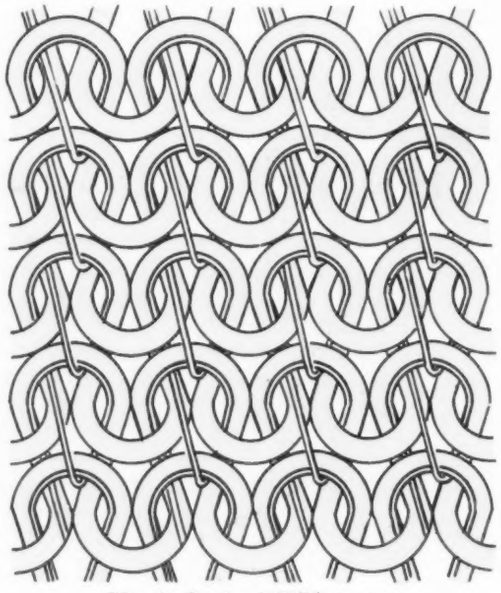


Fig. 4—Back of Wildt texture

Textile World Analyst

Early prediction indicates better textile volume in 1935

Textile Activity Index: Textile mill activity during the first nine months of 1934 was approximately 21% below that for the corresponding period of 1933 and 16% below that for the first nine months of the average year in the 1924-31 period, roughly assumed as "normal." This reflects the decreased demand which resulted in sharp curtailment during June, July and August, and the effect of strike conditions during September. Although official statistics beyond the nine-months' period are not available at this writing, our own estimates indicate a decided pick-up in October, with the result that activity during that month probably approximated that for October last year. This estimate, however, is subject to revision.

AS the football season draws to its close, an indoor sport takes its place as the national pastime. We are approaching the open season for New Year predictions. Before the field gets too crowded, we shall attempt one for the textile industry.

First, to complete the record for 1934. On the basis of events during October, plus sentiment at this writing, the prospect is for a relatively good rate of activity during the last quarter of this year. However, since the index for the first nine months, as noted above, shows approximately a 21% lower rate than during the corresponding period of last year, it is unlikely that, even with the improvement now taking place, the total activity for 1934 should be much better than, say, 18% below that of 1933. This is not as bad as it may seem, since 1933 was an unusual year. At the beginning of this year we predicted that 1934 activity would be approximately 10% below that of 1933; the strike and a certain amount of unanticipated buyer-resistance accounted for the difference.

Now, as to 1935. We feel no hesitation in predicting that textile mill activity will be at a higher rate next year than during the year now drawing to a close. The general business picture will be better, we believe, and in addition the textile-cycle theory indicates improvement in this branch of industry specifically. Much as we may scoff at this idea, it seems to be definitely established that there *is* a two-year cycle in textiles; 1935 should be one of the alternate good years, comparatively.

Being rash, and preferring some definite prediction to none at all, we would estimate at least a 10% increase in textile activity in 1935 over 1934. We say "at least" because we believe that is a conservative estimate.

If this forecast proves to be reasonably accurate, 1935 should be approximately a "normal" year, here using the 1923-25 average as "normal."

But thus far we have been referring to volume only. As to profits, 1933 was a good year, as compared with those immediately preceding, but its showing was based partly on inventory profits. Needless to say, 1934 has not been as good a year as 1933 in this regard. On this score, 1935 is anybody's guess. There are too many uncertainties in the present outlook to permit anything like a definite prediction. However, from what we know about the liquidation of a certain amount of the excess equipment, and the better management and merchandising policies which have been introduced steadily into the field, we believe that 1935 should be a fair year, at least for those firms which have kept themselves in shape. For the firm which is still clinging on to antiquated equipment and antiquated ideas, not much hope can be held out.

All of this is preliminary. Things happen fast nowadays, and predictions must be kept flexible. So we reserve the right to have another try at this forecast game a little later on.

The cotton group of TEXTILE WORLD's price index numbers suffered a fairly large drop in October and is now back at approximately the same level which prevailed last spring. Both yarns and fabrics declined more than raw cotton. Raw wool was steadier, and other items in the group declined slightly. For first time since last February the raw silk index showed a gain and now stands two points above the September low.

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	15.3	October, 1933...	19.1
October, 1931..	13.3	November, 1933	17.7
January, 1932..	12.1	December, 1933	17.6
June, 1932.....	9.5	January, 1934..	18.4
July, 1932.....	9.1	February, 1934.	19.1
August, 1932..	11.1	March, 1934...	18.3
September, 1932	13.0	April, 1934.....	17.6
October, 1932..	12.6	May, 1934.....	15.8
November, 1932	10.7	June 1934.....	15.4
December, 1932	10.6	July, 1934.....	15.5
January, 1933..	10.4	August, 1934...	16.6
February, 1933.	10.1	September. 1934	18.6
March, 1933....	10.2	October, 1934..	17.4
April, 1933.....	11.4	Oct. 3.....	18.0
May, 1933.....	15.6	Oct. 10.....	17.9
June, 1933.....	20.6	Oct. 17.....	17.4
July, 1933.....	23.4	Oct. 24.....	17.2
August, 1933...	21.4	Oct. 31.....	16.6
September, 1933	19.5		

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
July, 1931.....	12.6	October, 1933...	20.0
October, 1931..	12.7	November, 1933	18.4
January, 1932..	10.9	December, 1933	18.5
June, 1932.....	9.9	January, 1934..	18.3
July, 1932.....	9.6	February, 1934	16.5
August, 1932...	9.7	March, 1934...	16.8
September,1932	12.8	April, 1934.....	15.9
October, 1932..	12.3	May, 1934.....	14.3
November,1932	11.3	June 1934.....	13.1
December, 1932	10.9	July, 1934.....	14.7
January, 1933..	10.2	August, 1934...	15.3
February, 1933.	9.4	September, 1934	15.6
March, 1933....	9.8	October 1934..	14.6
April, 1933.....	10.1	Oct. 3.....	15.0
May, 1933.....	12.3	Oct. 10.....	14.5
June, 1933.....	15.4	Oct. 17.....	14.2
July, 1933.....	23.2	Oct. 24.....	14.2
August, 1933...	23.5	Oct. 31.....	14.5
September, 1933	21.3		

▼ ▼ ▼

Textile World's Price Index Numbers

Date	Cotton Index Numbers: Cotton	Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk
July 31, 1914..	100	100	100	100	100	100	100	100	100
1925, average..	187	188	189	176	223	229	224	233	143
1926, " ..	140	155	157	149	184	189	179	207	136
1927, " ..	140	153	159	153	181	184	187	195	119
1928, " ..	160	162	162	166	199	202	199	197	110
1929, " ..	153	144	145	167	176	179	192	211	108
1930 " ..	108	125	123	144	127	139	161	202	179
1931, " ..	68	93	92	119	99	112	134	161	54
1932, " ..	51	76	73	100	78	97	115	128	34
1933, " ..	84	116	110	113	116	135	139	181	35
Jan. 1934.....	124	151	139	144	153	180	181	222	32
Feb. 1934.....	132	148	146	144	153	180	181	222	34
Mar. 1934.....	132	149	145	142	152	178	180	209	31
Apr. 1934.....	128	144	141	141	147	176	180	209	30
May 1934.....	125	136	132	140	140	166	170	209	27
June 1934.....	132	136	132	140	138	160	169	209	26
July 1934.....	135	148	136	140	138	159	161	209	25
Aug. 1934.....	141	150	136	140	130	150	160	209	25
Sept. 1934.....	138	148	149	144	127	145	155	190	24
Oct. 1934.....	133	141	143	140	125	140	154	188	26

Note: All cotton indices since Aug. 1, 1933, include processing tax.

THIS DEPARTMENT

Offers every other month a collection of practical suggestions for meeting many of the miscellaneous problems which arise in textile mill operation. Readers are cordially invited to contribute, and published kinks will be paid for without regard to length. Brevity is desirable. Additional payment will be made for diagrams or photographs.

Kinks and

Avoiding Pitted Needles

In connection with the investigation they have made of the causes of pitted needles and sinkers on full-fashioned hosiery machines, B. L. Hathorne, textile consultant, and George A. Urlaub, of Louis Hirsch Textile Machines, Inc., recommend a simple test for determining the effect of a particular soaking solution on needles. A sample of the thrown silk is wound around several new, clean sinkers and placed in a tightly-corked test tube. The test tube is then placed in a warm spot and the condition of the sinkers observed from time to time. Pits will appear if the soaking solution contains free acid.

It is not sufficient to ascertain by test that the soaking solution is on the alkaline side, they point out, since the bath may test alkaline and still contain appreciable quantities of unsaponified free fatty acid. All ingredients used in soaking must be of such a nature that the silk does not contain free fatty acid after soaking or materials that can slowly oxidize during storage to form free acid. Messrs Hathorne and Urlaub urge that any silk especially thrown for ringless hosiery be carefully examined, as proper testing at the outset will avoid a repetition of the epidemic of pitted needles that accompanied the introduction of special soaking formulas for grenadine and other high twists.

Top and Bottom Creel Cleaner

The methods of cleaning top and bottom creels in spinning rooms are many. A handful of waste is probably the most common instrument used. At its best this method is liable to leave lint on the roving as the cleaner withdraws her hand from the creel. Again, with a handful of waste it is impossible to lift the roving bobbin and skewer high enough to allow the passage of the hand and waste beneath.

The device shown in the accompanying sketch is a combination of two instruments. The brush end is used to clean the bottom creels and this type is familiar to many spinning overseers. The brush is swabbed about on the bottom creel and the lint adheres to it. Periodically it is withdrawn and cleaned by hand. The tapered end is used to clean the top creels. This end is dipped in glue then into woolen shear flocks. By rolling the flock-covered end of this instrument along the top creels the lint is rolled up onto the stick. It is necessary to lift the skewers and bobbins but a short distance to allow the stick to pass under and clean thoroughly.

FRANZ E. BAKER.

A Way to Center Cloth On Starching Range

The cloth on a starching range, although automatically guided from the scutcher, showed a tendency to run too far to one side entering the first nip of the water mangle. The cloth came down vertically from the delivery roll of the scutcher to a wooden turn-bar which changed it to horizontal plane, but the distance from scutcher to mangle was such that the air guiders on the scutcher did not prevent cloth running off center into the first nip of mangle. This circumstance resulted in quite a bit of trouble to range operators until the wooden turn-bar was made adjustable at one end and pivoted at the other. This arrangement permitted operators to adjust the cloth to machine centers easily and quickly while the machine operated, thus eliminating the very annoying trouble of running off center.

H. H. ILER.

How Much Yarn Will a Beam Hold?

Occasionally it is desirable to know the approximate number of pounds of yarn that may possibly be wound on a given loom beam, particularly in the manufacture of narrow fabrics. A fairly accurate figure may be found by first determining the available yarn space on the beam in cubic inches and then multiplying by 0.02. The factor 0.02 represents the approximate weight in pounds of one cubic inch of solidly wound cotton yarn of average count. If the material is wound on the beam under the proper tension, it will not be necessary to make any allowance for space at the outer edge of the flange.

The available yarn space of a beam may be found by multiplying together one half the diameter of the head, one half the circumference of the head, and the traverse; and then deducting the volume of the barrel which may be determined by multiplying together one half the diameter of the barrel, one half the circumference of the barrel, and the traverse.

Example: The available yarn space on a given loom beam, with $10\frac{1}{8}$ in. traverse, 15 in. head, and 4 in barrel, after allowing for the barrel, is 1,210 cu.in. Then, $1{,}210 \times 0.02 = 24.2$ lb. capacity.

A reasonable figure to use for cubic inches per pound of solidly wound average count yarn is 50. Therefore, dividing the available yarn space of a given beam, expressed in cubic inches, by 50 will produce the same result as above.

EDWIN J. GIBBONS.

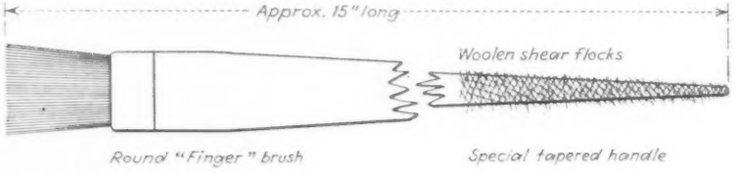
A Better Scour

A women's wear coating fabric, made with mixture yarns of equal proportions of white, light blue and dark blue, was scoured by the ordinary process with rather disappointing results. The color effects looked indistinct and lacked "bloom," and the handle was poor and flat. Acting on the theoretical assumption that the cause of this trouble was directly connected with the scouring process, it was decided to try the quicker method of scouring by using a penetrant solution. The resulting finished cloth was nothing short of amazing, the handle being nice and lofty and the mixture effect pronounced and colorful.

The solution used was as follows:

15%	Penetrant
6%	Alkali
79%	Soap (without tallow content)
100%	

Thoroughly saturate the piece in lukewarm water, add $1\frac{1}{2}$ pails of solution



Wrinkles

to 50 yards of cloth and run for 10 minutes or until clean. Rinse in lukewarm water for about 15 minutes.

The cause of the improvement apparently was due to: quicker and better swelling of fibers; shorter time of scouring operation; quicker penetration of cleaning agent thereby reducing length of time in water. A. C.

Useful Drying Frame

Patterns or sample lengths $\frac{1}{8}$ to $\frac{1}{4}$ yd. long are extremely difficult to deal with, particularly if the patterns are narrow in width. Considerable expense is entailed in the drying machines

by having to break out in width for these lengths, and, apart from the expense and trouble, the result is often far from satisfactory. In addition, patterns occur which are too narrow in width for the drying machine to cope with.

A drying frame can be made as in the accompanying sketch, which allows the patterns to be quickly and easily dried. The advantages are that the patterns are held under tension in both width and length, and the result generally is much better than the drying machine.

The frame consists of two wood strips about $1\frac{1}{2}$ in. in width and about 2 yd. in length. Card clothing is tacked to the wood, which holds the selvages of the patterns securely. Two iron rods, at right angles, pass through the wood strips at either end. These are drilled every quarter of an inch up to 60 in. in width. Wood pegs can be inserted in the holes to keep the wood strips apart and the sample under tension.

The frame is placed in the drying chamber of the machine until the patterns are dried.

G. L. Atkinson

Minimizing Pulling-in Of Filling

In running double-face or reversible fabrics on a box loom using from two to four colors of filling, considerable difficulty is often encountered in preventing inactive filling from looping and pulling-in at the selvage of the goods.

If it were possible to keep the yarn from the inactive shuttles taut, this would not occur; but such a course is impossible because of the changing distance between the eye of the shuttle and the selvage of the goods, due to the reciprocating motion of the lay and to the raising and lowering of the boxes.

Checking up on the following points may do much to minimize the trouble:

(1) Is filling so dry that kinks form more easily than under normal conditions?

(2) Is there excessive twist in the filling?

(3) Is it possible to time the shed so that it will close a little earlier?

(4) Are shuttles rebounding in the boxes?

(5) Is there sufficient friction in the shuttles?

(6) Can shuttles be arranged to give fewer skips?

After these matters have been investigated, and if the trouble still continues, there is a simple device which may be applied to the loom and which will do much toward eliminating the unsatisfactory condition. First procure a strip of fancy clothing about six inches long. Cut this lengthwise so that you have a strip the width of one rib, then remove all but one row of wire staples. The strip is then riveted to a suitable metal bracket and this is attached to the lay just in front of the mouthpiece, as shown in the accompanying sketch. The wire is so supple that it does not hinder the passage of the shuttle; but, at the same time, it permits control of the filling and holds it in position so that it does not tangle with adjacent yarns.

NEXT MONTH—

The "Overseers Round-Table" will appear in this space with a new discussion and with readers' comments on the question of machinery inspection, which was opened for discussion in the October, 1934, issue. "Kinks and Wrinkles" and the Round-Table will continue in alternate months.

▼

If it proves inconvenient to use the fancy clothing, a satisfactory substitute may be fashioned from a strip of fabric of a good firm construction. A strip about three inches wide is cut from the fabric and threads are withdrawn from each side until there is a fringe about an inch wide on both edges. The strip is then immersed in size and allowed to dry. It may then be applied to the loom in a manner similar to the fancy clothing. It is well, however, to twist the strip so that the fringe will form spirals on the outside. Some experimenting may be required to secure the proper distance between either the fancy wire or the fringe and the raceway.

Merely winding a piece of napped or pile fabric around the mouthpiece may also be of benefit. R. W. R.

Cloth Carrier Rolls

To make handy, inexpensive, non-staining carrier rolls for finished cloth, proceed as follows:

1. Cut thin-walled, seamless, brass tubing of the desired diameter and length.

2. Turn seasoned oak or maple plugs to fit tightly in the ends of the tubing, with a pocket bored in each to take an inexpensive, single- or double-row ball bearing.

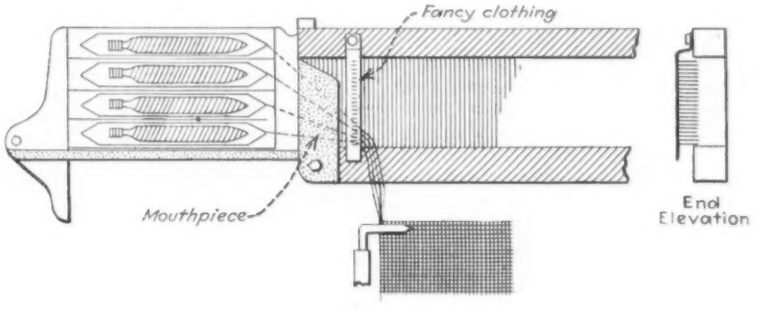
3. Set plugs and bearings in with cement. Fasten plugs in place with four center-punch marks in ends of tubing over the plugs.

4. Use cold-rolled shafting, longer than the rolls, for centers, which are non-turning.

5. Cut off brass or iron pipe-sleeves to use as collars between the ends of the rolls and the supports.

For ceiling rolls, good supports can be made from floor-plate flanges, threaded space-nipples, and Ts.

Wm. H. Adams



QUESTIONS AND ANSWERS

Bar Marks in Silk Crepe

Technical Editor:
We are inclosing a sample of French crepe made up of a three-thread, 13/15, Japan, 40/45-turn for filling and a 20-22, Japan warp. Kindly give us your opinion as to the cause of the bar marks, which do not seem to run straight across the sample. (8154)

These bar marks run completely across the fabric, although this is more evident in certain areas than in others. In cases of this sort it is difficult to determine the reason for the trouble without an opportunity to observe the operation of the loom, as there are numerous conditions which will cause this defect.

Some of these are loose arms and bearings, giving the reed too much side play; shuttle chafing the shed; beam sticking in the brackets; take-up motion not properly adjusted; and harness not timed properly. We believe that your trouble lies either in the reed being too loose or in your rope or let-off mechanism not functioning properly, although we advise you to watch the running of your loom to see that the picking is operating satisfactorily and is not causing the protector to hit the frog.

We also wish to call your attention to the fact that the filling in this sample is poor and likely to cause streaky merchandise.

▼

Shiners in Rayon Fabric

Technical Editor:
We have experienced considerable trouble of late with what we consider to be periodistic spun rayon. We are sending you a sample of our cloth having 100-denier, 40-filament, bright rayon for the warp, and 150-denier, 60-filament, dull yarn for the filling. Will you kindly examine this piece of cloth, and let us know whether you consider the trouble is due to rough handling of the rayon after being spun and received at our mill in skeins, or whether you consider the yarn has been badly spun. (8141)

The picks in which this defect appears are woven too tightly, causing so-called shiners. As the twist of the yarn is the same throughout the sample, it appears that the tight picks are due to uneven tension in the shuttle.

▼

Glazing Silk Thread

Technical Editor:
We have been reading with interest your articles on glazing sewing threads. We should appreciate it if you would inform us whether these solutions will work out as well on silk threads as they do with cotton. Is it possible to have a solution for glazing the silk without the rollers? (8177)

Ordinarily, the glazing of silk threads does not improve their appearance or increase their strength. Therefore we cannot recommend it as a means of increasing the value or utility of silk. However, if you want to experiment along this line, you might try one of the formulas recommended in the articles to which you referred, but use 1 qt. to 2½ gal. of water. If this is not a heavy enough mixture, increase the amount of size until you obtain the consistency desired.

For a light finish, we suggest taking ½ lb.

powdered carob gum, mixing it thoroughly with 2 gal. of water, and letting it stand overnight. Add this to the size box on the dresser with the necessary water to bring it up to the proper level. Run the silk through the size rolls, and brush very lightly.

We do not know of any process of glazing the silk without using the rollers, as they, of course, feed the thread at the proper speed and allow the thread to be brushed under tension.

We imagine that you are conversant with the pyroxylin coating of silk threads.

▼

Faulty Knot-Tying

Technical Editor:
We are inclosing a stocking of 4-thread 15 turns. You will note a streak about 4 in. from the welt. In this streak there is a knot. Please let us know whether, in your opinion, this streak is caused in the knitting or throwing department. (8121)

The silk appears to have been tied by means of the weaver's knot commonly used by the throwsters when throwing silk for knitting. The knitters also use this knot, but do not usually trim the ends nearly so close as this one is trimmed. The fine line on the hose was apparently caused by a breaking down of a single strand on the twisting machine. The operator probably failed to pull back all the strands in order to tie the broken single strand; instead, he allowed the break to pass, then, cutting all the strands, he replaced the broken strand in the new end and tied the knot. This would produce exactly the appearance of the hose submitted. Our opinion could be checked readily by an analysis at one of the testing houses.

▼

Slub-Catcher Settings

Technical Editor:
We have drawn up a tentative schedule of stripper settings for our winding department as follows:

Cotton Yarn No.	U. S. Standard Gage
8s	20
9½s	20
14s	26
16s	28
18s	30
20s	30
22s	30
24s	32
26s	32
28s	32
30s	32
45s	34
50s	36
60s	38

Our winding-department foreman seems to be having considerable difficulty in conforming to these standards in that the yarns all seem to break at practically every knot.

We shall appreciate it very much if you will let us have your idea on this subject. We do not want to attempt to do the impossible, but on the other hand it is desirable to have our stripper settings just as close as is practical. (8069)

We assume that the figures under the heading "U. S. Standard Gage" represent the spaces between the slub-catcher jaws for the various yarn counts and that you have established that these slub-catcher settings will remove practically all of the imperfections that you care to take out of your yarns. We assume that it is your practice to purchase yarn that has previously been wound and rewind this material in your own plant, since oherwise you would have no problem with knots.

As the opening between the slub-catcher jaws is smaller than the knot, it is obvious that every knot must break down as it strikes the slubbing device. If the slub catcher were set to allow the knots to pass through, the jaws would not be sufficiently close to slub the yarn effectively. If you are purchasing rewound yarns, the only solution would seem to be in having the yarn slubbed properly in the first winding and use no slub catchers at all in the second process.

Your problem could also be largely solved by adopting a type of slub trap which, while it arrests every imperfection and every knot, does not break down the yarn. A trap of this character, which was developed last year, stops the winding spindle with the imperfection or knot located at a convenient place for the operator to observe it. In many cases the imperfection can be removed without breaking down the thread, and of course in the case of a knot the operator simply starts the winding spindle again and allows the knot to pass on to the winding package.

▼

French-Spun Yarn Uneven

Technical Editor:
Under separate cover we are forwarding four cops of yarn. The two cops of gray are dry spun for the half-hose trade, and the two cops of white are dry spun for the jersey-cloth trade. We should appreciate a full and frank criticism of the two yarns and their suitability for the purposes for which they are made. We have had a certain amount of difficulty in satisfying one or two particular customers and should like to secure a thoroughly disinterested and independent judgment on the two yarns. (8153)

A knitting yarn should be elastic, even, and lofty. The samples submitted are more like weaving yarns. They possess sufficient elasticity, but in our estimation they contain too much twist and are very uneven. We should not care to use either yarn as a single yarn, even for weaving.

The unevenness is of such a character that we do not hold the mule room responsible, as we believe that tests of the roving would expose its unevenness. This unevenness may be increased at the mule by overdraft, but we doubt it. On one cop of the white we found much variation, there being one or two draws of fairly even yarn followed by a length of very uneven yarn which was full of somewhat relatively long, thin places. The thin places vary from ½ to 8 in. in length.

We suggest that you have some of your yarn, both white and gray, knitted plain stitch. Then you will at once understand why certain customers are not satisfied.

QUESTIONS AND ANSWERS

If you do not have a small tubular knitter, we suggest that you purchase one and use it to test out the knitting yarns.

With regard to the gray yarn, we call your attention to the prevalence of neps, which cause trouble at the knitting machine and certainly detract from the appearance of the half-hose.

Summing up our criticism, we find both yarns unsatisfactory as regards evenness and lack of fullness—the latter being due to the excess twist. The unevenness is due either to poor drawing or the use of a top which is not good enough for the yarn count required. The white yarn is better than the gray as regards evenness.

▼

Streak in Knitted Fabric

Technical Editor:

Inclosed you will find a piece of knitted fabric which was made from 1/17s high quarter-blood wool. The top was slub dyed and run through eight operations. The tops were also put through a couple of gillings before entering the drawing room and were run through a backwasher and dryer.

The customer complains about the streaks in this fabric. We contend that this defect could be caused by the tension in the knitting machine, while he asserts that it is caused by uneven dyeing. We cannot understand why any unevenness should appear after the wool has gone through all these operations. These highlights do not appear in all of the fabric, but seem to occur at different intervals.

If you will examine this piece of fabric in different lights, you will notice that the streaks show up in one light, but disappear when the goods are held at a different angle.

The yarn seems to be even enough, as we have dyed it in several other shades without complaint. The following is the formula that is used in dyeing this particular shade: Erio Fast Brilliant Blue, 1627 grams; Fast brilliant Wool Blue FF, 247 grams; Sky Blue R, 26 grams; and 1% acetic acid. We boil for ½ hr.; exhaust with 1% of sulphuric acid; and run 30 min. without steam. (8128)

Those streaks occur in every eighth course or feed. There is no indication that the defect is caused by uneven tension on the yarn or unevenness of stitch. It is our opinion, therefore, that the streaks are due to a variation in the color of the yarn; that is, seven of the cones of yarn were of uniform shade, while the eighth cone was of a different shade. The only reasonable explanation for this condition which comes to mind is that the yarn was spun from tops which had been dyed in two lots.

▼

Tension on Rayon Warps

Technical Editor:

We are having considerable trouble on the last 15 to 20 yd. off the loom on rayon warps. While we give these bands plenty of tension when tying them on the beam preparatory to slashing, the unequal tension is not then noticeable. When the warps have only from 15 to 20 yd. to run off on the looms, this looseness of ends and bands becomes apparent. These warps have about 6,000 ends, are about 1,000 yd. long, and are made on flange beams. They are sized on a Johnson three-drum machine. Empty beams have a diameter of 5 in. Yarn used is 100-denier rayon. Can you tell us how to avoid this trouble? (8118)

There is only one condition that can cause loose ends and loose bands to appear on the last 15 or 20 yd. This trouble is not the outcome of difficulties in warping or slashing. It is due to an erroneous practice in the weave shed.

Due to the limitations of tension in slashing, it is common practice to give the warp excessive tension in weaving. This excessive weight causes the warp to shift within itself during the process of weaving. With considerable material on the warp, this does not reveal itself because the weights take care of it. It accumulates at the end of the warp, and when there is not enough material left to permit shifting of the warp, the weights will then refuse to act as a leverage to absorb the loose and tight ends. It is then that the loose ends will be taken up by the reed and woven in, leaving marks. This increases to the end of the warp.

The proper thing to do in any rebeamed warp is not to permit more tension on the warp in weaving than was given in the process of rebeaming or slashing. In slashing, great care must be taken, because some of the tension is dissipated due to the long stretch from one beam to the other.

▼

Ratine Is Streaky

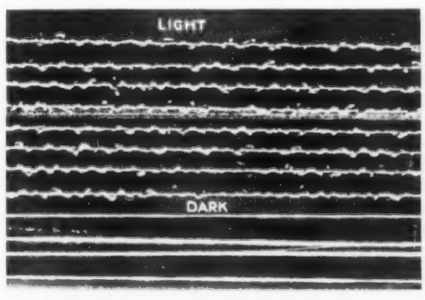
Technical Editor:

We are inclosing a piece of cloth made from rayon ratine, which you will observe is streaked. Will you give us your opinion as to whether this is caused from faulty dyeing, knitting, or pressing. The yarn was dyed in the skein and was knit on a sinker-top Stafford & Holt machine, six ends going into the cloth. (8124)

With the small sample of cloth submitted, it is not possible to tell whether or not these streaks in the fabric run along definite courses. However, to check the knitting, a series of measurements of the lengths for courses was made. A width of about 6 in. gave the following results:

Feed	No. 1	No. 2	No. 3	Average
1	20⅜	20¼	21	20½ Normal
2	21⅜	21⅜	21	21¼ Long
3	19⅝	19⅞	19¼	19⅝ Short
4	20⅜	21	21⅜	20⅞ Long
5	20¼	20⅜	20⅜	20⅜ Normal
6	20	20⅝	20	20¼ Normal

By marking the light spots in the fabric and raveling the short lengths, we found it possible to compare yarns from the light spots with normal yarns. This test showed that the yarns were actually lighter in shade at the light streaks. However, these light streaks did not continue far. The same yarn was darker a few inches from the light spot.



The inclosed black card (see illustration) shows light yarn in the first four lines. The second four lines are the same strands of yarn a few inches farther along. The middle yarns in the third four are the core yarn of the ratine. You will notice the lack of penetration.

We did not find any difference in twist that would account for this trouble.

While the stitch varies at different feeds, the only way this might be responsible for the defect would be to cause the outer layers of rayon to slip on the core, which might make the yarn look lighter. However, there seems to be no great difference in the yarns on the black card except for color. Therefore we believe that the trouble comes from the dyeing.

▼

Nubs in Cotton and Wool Goods

Technical Editor:

Inclosed you will find a small piece of cloth. Will you examine the sample and tell me how the small nubs are put in it. It seems to me that they are put into the sliver after the sliver has left the card. That is, it looks as if they have been cut and dropped in the web at the card. If so, I should like to know what kind of equipment it would take to put them in.

Also I am sending you a piece of wool goods. Will you kindly tell me how the small nubs are produced in this fabric. (8148)

In the woven cotton fabric the nubs (really specks or flakes) are put into the yarn at the spinning process. A spinning frame with foot-end gear drive between the front and middle rolls and with head-end gear drive between the front and back rolls can easily be changed over to make this type of yarn.

Apparently, three rovings were used, two white (natural cotton color) and one light brown or tan. The two white were fed to the middle rolls and then to the front rolls. The brown or tan roving was fed to the back rolls and then through the middle and front, but this roving was fed intermittently by using a large draft gear at the head end and cutting or knocking out several teeth in a group, leaving one or two teeth, and then knocking out several more teeth and leaving one or two, etc.

Two other changes are required. Eyes will have to be provided to guide the two white rovings directly to the middle rolls, skipping the back rolls. A traveler with a large circle will have to be used. This method is a simple way of getting the results desired, although there are special novelty-yarn machines which will make this and other types of yarn.

In the case of the knitted wool fabric the effect is produced by mixing very soft, felted wool nibs (dyed black to resist piece dyeing) with the white raw stock. By weight the nibs constitute 1 or 2% of the whole. The green dye is applied in the piece.

THE PERSONAL PAGE

Horace B. Cheney, vice-president and a director, **Howell Cheney,** secretary and a director, **William C. Cheney,** head of the winding, throwing and testing departments, **C. Herman Cheney,** traffic manager, and **Louis S. Carter,** treasurer, have retired from Cheney Brothers, Manchester, Conn. **Clifford D. Cheney** becomes vice-president and mill manager and **Ward Cheney** continues as president and has been elected treasurer in addition. **Henry R. Mallory** becomes comptroller. A curtailed production program is assigned as the reason for these retirements.

George A. Sloan, president of the Cotton-Textile Institute, is featured in a recent issue of *Forbes Magazine* as among the leading twenty men selected through a poll conducted by the magazine to discover which men of affairs in the judgment of their fellows are best qualified to furnish the President the soundest advice. Among the second twenty names appears that of **Charles A. Cannon,** president of Cannon Mills.

Col. Francis T. Maxwell, president, **William Maxwell,** secretary and treasurer, and **David A. Sykes,** vice-president and manufacturing executive, all of whom retired from active management when the Hockanum Mills Co., Rockville, Conn., was sold to M. T. Stevens & Sons Co. in June, were presented with illuminated testimonials at a gathering of executives, overseers and salesmen Oct. 15.

Joseph Gerli has been elected president of E. Gerli & Co., New York, to fill the vacancy caused by the death of **Emanuel Gerli.** He is also treasurer. **Paolino Gerli** moves up from second to first vice-president, his former position being filled by **John E. Gerli.**

I. Robert Hyatt has resigned as president and a director of American Hosiery Co., Hartford, Conn.

W. L. Parkis has been made president of Connecticut Cordage Co., Danielson, Conn., succeeding **C. H. Weare. A. R. Manning** has been elected secretary and treasurer.

Fred Boyd, for the last 13 years superintendent of the St. Croix Cotton Mills, Milltown, N. B., has retired.

Beirne Gordon Jr., vice-president of the Skenandoa Rayon Co., Utica, N. Y., has been named representative of manufacturers on the board of appeals under the NRA in that city.

W. H. Suttenfield, secretary and treasurer, Superior Yarn Mills, East Monbo, N. C., was recently elected president of the Southern Combed Yarn Spinners Association, succeeding **A. K. Winget,** president, Efird Mfg. Co., Albemarle, N. C. Other officers elected were: **A. M. Dixon,** president and treasurer, Dixon Mills, Inc., Gastonia, N. C., first vice-president; **R. B. Suggs,** secretary and treasurer, Acme Spinning Co., Belmont, N. C., second vice-president. Directors elected to serve for three years were: **John H. Rutledge, A. G. Myers, C. D. Welch,** and **T. L. Wilson. W. L. Balthis** was elected a director to fill an unexpired two-year term.

Geo. A. Sloan

H. N. Cappel

Howard E. Coffin, chairman of the board of Southeastern Cottons, Inc., and **Hiram Rivitz,** president of Industrial Rayon Corp., are among the 35 directors of the Committee for Economic Recovery, recently formed as a medium through which the help of business may be passed to the administration at Washington.

Howard N. Cappel, vice-president in charge of sales, and **E. W. Martin,** sales manager, respectively of Tubize Chatillon Corp. have resigned. Mr. Cappel had been with the firm since 1925 when he joined its predecessor, the old Tubize Artificial Silk Co. in a sales capacity. He will take a two-months vacation before making new plans. Mr. Martin became sales manager in 1932, having formerly represented the company in Pennsylvania. The resignations were attributed to the recent reduction in Tubize yarn production which made necessary a proportionate lowering of distribution costs.

Textile Calendar

American Association of Textile Chemists and Colorists, Southeastern Section, Atlanta, Nov. 10, 1934.

National Association of Woolen & Worsted overseers, annual meeting, American House, Boston, Mass., Nov. 17, 1934.

North Carolina Cotton Manufacturers Association, annual meeting, Carolina Hotel, Pinehurst, N. C., Nov. 22 and 23, 1934.

Southern Textile Assn., Master Mechanics Division, Franklin Hotel, Spartanburg, S. C., Nov. 23, 1934.

Cotton-Textile Institute, annual meeting, Biltmore Hotel, New York, Dec. 5, 1934.

American Association of Textile Chemists & Colorists, Annual Meeting, Hotel New Yorker, New York, Dec. 7 and 8, 1934.

National Federation of Textiles, **Inc., successor to Silk Association of America, Annual Dinner, Waldorf-Astoria Hotel, New York, Feb. 28, 1935.**

Southern Textile Exposition, Eleventh Annual Exhibit, Textile Hall, Greenville, S. C., Apr. 8 to 13, 1935.

American Society of Mechanical Engineers, Textile Division, meeting with Greenville Section, Greenville, S. C., Apr. 10, 1935.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, Pa., Apr. 22-26, 1935.

National Cotton Week, May 6 to 11, 1935.

G. J. Weihe, formerly of New York City, has been appointed general manager of the Sanitary Knitting Co., Grand Rapids, Mich., succeeding the late A. E. Clarke. He has background in banking and commercial fields as an import and export official.

T. C. Cox, president, Wade Mfg. Co., Wadesboro, N. C., has resigned to devote entire time to other business interests. He is succeeded by **L. D. Rivers** who will also continue as president West Knitting Corp., Wadesboro.

Edward J. McMillan, president, Standard Knitting Mills, Inc., Knoxville, Tenn., has also been elected president Cherokee Spinning Co., Knoxville, Tenn., succeeding **Hal B. Mebane,** deceased.

A. G. Heinsohn has been appointed general manager of the Cherokee Spinning Co., Knoxville, Tenn., succeeding **Hal B. Mebane, Sr.,** deceased.

G. H. Blankenship, formerly of Mount Holly, N. C., has become superintendent of the Charles H. Bacon & Co. cotton mills at Lenoir City, Tenn.

E. S. Sumner has become superintendent of the Monroe (Ga.) Cotton Mills, succeeding **J. R. Donaldson,** who resigned.

J. R. Donaldson, superintendent Monroe (Ga.) Cotton Mills, has resigned his position.

Kay Dixon, treasurer, Trenton Cotton Mills, Gastonia, N. C., has been elected president of the new Gastonia National Bank of Commerce. **T. L. Wilson,** treasurer, Ruby Cotton Mills, Inc., Gastonia, is vice-president.

E. B. Speth, Clemson Textile School, class of 1931, has resigned his position with Gregg Dyeing Co., Graniteville, S. C., to accept a position with Aiken Mills, Inc., Langley, S. C.

F. G. McCoy, Clemson, class of 1933, is now assistant electrical engineer, Aiken Mills, Inc., Langley, S. C.

Paul Smith, formerly superintendent of Arnall Mills, Sargent, Ga., is now superintendent of Luanna Mills, Inc., Toccoa, Ga.

Oscar Crews is now overseer carding and spinning Davidson (N. C.) Cotton Mills, Inc., succeeding **J. M. Morris,** resigned.

T. J. Higgins has been made overseer of the wool shop at the Wood Worsted Mill (American Woolen Co.), Lawrence, Mass.

J. W. Skipper, Sr., is now assistant superintendent Aponaug Mfg. Co., Kosciusko, Miss.

H. H. Wood is now assistant superintendent, as well as overseer of weaving, Oconee Textiles, Westminster, S. C.

Lacy Maulden is now production manager of Cannon Mills Co., Kannapolis, N. C., succeeding **Homer L. Ballard,** now superintendent Roxboro (N. C.) Cotton Mills.

Arthur H. Mason, superintendent, National Weaving Co., Lowell, N. C., has resigned.

R. C. Edwards, Clemson Textile School, class of 1933, has resigned his

position with Dunean Mills, Greenville, S. C., to accept a position with Charles Mills Co., Red Springs, N. C.

H. C. Brooks, president and agent of Broad Brook (Conn.) Co., has disposed of his interest in the concern to a group headed by **William Weise,** New York, selling agent, and will retire.

J. Blackwood Cameron has been appointed by Dixie Mercerizing Co., Chattanooga, Tenn., as sales agent in the Philadelphia territory.

William H. Hodgson has severed his connection with Hillsboro (N. H.) Woolen Co., where he has been designer for the last year and a half.

Max R. Cramer, formerly general manager of Lyons Piece Dye Works, Paterson, N. J., has been appointed manager of Long Island City, N. Y., plant of United Textile Print Works.

Ernest F. Thomas, of Phillips Thomas & Co., cloth brokers, has joined the Burlington Mills Co. and will have charge of merchandising rayon fabrics in New York. **Wheeler G. Phillips,** associate of Mr. Thomas, plans to continue the brokerage firm.

Robert A. Johnston, formerly New York office manager, A. T. Shaw & Co., Chicago, and more recently with Iselin-Jefferson Co., has joined Southeastern Cottons, Inc.

Obituary

Frederick C. Aberle, aged 87, president of H. C. Aberle Co., Philadelphia, died Oct. 11. Mr. Aberle came to this country from Germany in 1863. He established the Brown-Aberle Co. in 1888 and the H. C. Aberle Co. in 1900. Up to the time of his death, Mr. Aberle was regarded as the oldest manufacturer in the hosiery industry.

Emanuel Gerli, aged 75, founder and president of E. Gerli & Co., New York, died at his home, Smithtown, L. I., on Oct. 9. Mr. Gerli came to this country from Italy in 1883.

A. Edward Clark, president, treasurer and general manager of Sanitary Knitting Co., Grand Rapids, Mich., died Sept. 22.

Malvin C. Burrell, vice-president and general manager of the Orr Felt & Blanket Co., Piqua, Ohio, died Oct. 11. Mr. Burrell had been connected with the company or its predecessor for 40 years.

James Ripley Hooper, aged 80, formerly a member of the firm of Minot, Hooper & Co., and at one time treasurer of Slatersville (R. I.) Finishing Co. and a director of Arlington Mills, Lawrence, died at his home in Boston on Oct. 25.

Henry J. Diener, aged 61, president of Hamburg (Pa.) Knitting Mills & Bleach Works, Inc., died Oct. 6. Mr. Diener was also one of the proprietors of Spring City (Pa.) Bleach & Dye Works and was financially interested in other knitting mills.

Francis J. Hagenbarth, aged 66, for 21 years president of the National Wool Growers Association and honorary president since his retirement last January, died at Santa Barbara, Cal., Oct. 20.

Harry J. Donnelly, aged 60, one of the founders of the E. L. Greene Knitting Mills, Inc., Bath, N. Y., died Oct. 5.

John Frederick Kistler, aged 28, vice-president of Valdese (N. C.) Mfg. Co., vice-president of Waldesian Weavers, Valdese, N. C., and a director of Morganton (N. C.) Full Fashioned Hosiery Co., was fatally injured in an airplane accident near Morgantown on Oct. 21.

Arthur J. Harris, vice-president and treasurer of Harris Bros. Silk Co., Paterson, N. J., died on Oct. 15.

Frederick I. Dana, aged 69, formerly manager of Textile Finishing Machinery Co., Providence, died at his home in Hoxie, R. I., on Sept. 30.

George Dawson, aged 57, superintendent of Talcott Bros. Co., Talcottsville, Conn., died on Oct. 19.

Frank P. Ashe, treasurer of the Ashe Mfg. Co., Rensselaer, N. Y., died Oct. 20 at that place.

Study of Mill Stores

An extremely interesting study of the mill store situation in the South has been prepared by a special committee of the American Cotton Manufacturers Association. William P. Jacobs, secretary-treasurer of the Cotton Manufacturers Association of South Carolina is chairman of that special committee. The report was submitted to the President's Committee composed of Charles B. Fowler, H. P. Dutton and Daniel Bloomfield.

The committee endeavored to prove the following facts: (1) that the worker needs the mill (or company) store; (2) that the worker needs an unusual extension of credit; (3) that "scrip" and "payment over wages" have proven to be the most satisfactory method. The report includes both exterior and interior views of a number of mill stores in the South.

On the committee with Mr. Jacobs were Hunter Marshall, Jr., secretary of the Cotton Manufacturers Association of North Carolina; T. M. Forbes, secretary of the Cotton Manufacturers Association of Georgia; and W. M. McLaurine, secretary of the American Cotton Manufacturers Association. The work was done in cooperation with the Piedmont Textile Retail Stores Assn.

Iselin Acquires Passavant

The business of Passavant & Co. is being transferred to Wm. Iselin & Co., Inc., as of Jan. 1, 1935, according to announcement by Jarvis Cromwell, president of the latter company. Mr. Cromwell added that the various accounts of mills, mill agents and manufacturers heretofore factored by Passavant will do business in the future through the Iselin organization. According to Alfred H. Rust, sole surviving partner of Passavant & Co., the decision to liquidate the capital and transfer the accounts was reached in deference to the estate interests. Mr. Rust will become a vice-president of the Wm. Iselin & Co., Inc., and will have personal charge of relations with the former Passavant accounts.

Passavant & Co. was established in 1853, and is one of the oldest textile factors. Wm. Iselin & Co., Inc., a subsidiary of the Commercial Investment Trust Corp., was formed a few years ago upon the acquisition of the factoring business of the partnership of Wm. Iselin & Co., which for over a century has occupied a leading position in financing textile industries.

Parks-Cramer Acquires Firth-Smith

R. S. Parks, chairman of the board of Parks-Cramer Co., Fitchburg, Mass., and Charlotte, N. C., announces an arrangement whereby his firm has acquired the bunchless automatic cleaner and the dustless card stripping and cleaning business heretofore handled in the United States, Canada, and Continental Europe by Firth-Smith Co., Boston. W. J. Smith, for the last seven years president, and W. B. Walker, southern representative, of Firth-Smith Co., have become associated with Parks-Cramer Co., Mr. Smith as vice-president and Mr. Walker as sales manager of the cleaner department.

It will be the policy of Parks-Cramer Co. to continue the manufacture and sale of the cleaning apparatus and devices which it has successfully developed and sold together with those formerly developed and sold by Firth-Smith Co. However, where features of one device will improve or simplify those of the other, changes in each or both will be made.

Sloan Defends Machine Limitation

A spirited defense of the general principle of limitation of productive machine operation was made by George A. Sloan, president of the Cotton-Textile Institute in an address before the Association of Commerce, Baltimore, Md., Nov. 2. He analyzed the argument of "those who tell over-expanded industries that the way out of their difficulties is through increased production regardless of consumer demand."

"With infectious catch phrases such as 'produce to the limit and give more jobs'—'mass production provides mass jobs'—and 'open wide the doors to prosperity,' the smart boys who sit on the sidelines fashion in fancy more and more production. This type of reasoning and play on the public imagination emanating from those who have neither the tempering experience of practical business nor of carrying the responsibilities of government administration, ignores the workings of the market-place. They wholly fail to point out a method by which a flood of increased production could in practice be absorbed by the market instead of paralyzing it. . . .

"At first reading this general appeal for opening the flood-gates sounds well enough but unhappily it ignores the bitter experiences of the oil, coal, and textile industries where uncontrolled overcapacity produced over a period of years chronically depressed conditions which even the boom period of 1929 could not relieve."

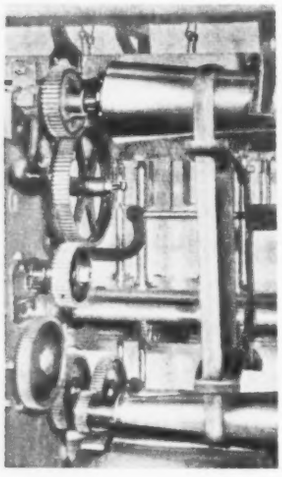
Moisture-Content Control System

A new development in automatic control which combines accurate regulation of speed, as well as heat, was to have been featured at the Southern Textile Exposition by Powers Regulator Co., 2720 Greenview Ave., Chicago. This new system of moisture-content control is adapted for use on warp-sizing equipment, tenters, and continuous dryers where the product being dried is in web form.

The control instrument is designed to maintain automatically within exceedingly close limits any predetermined percentage of moisture in the finished product, and a continuous daily record of the controller's operation as to moisture is furnished by an indicating-recorder. The accompanying illustration shows the instrument applied to a cotton slasher.

Improved Roving Frame

A number of structural changes have been made recently in the Woonsocket type roving frame, manufactured by Whitin Machine Works, Whitinsville, Mass. Improvements include the following: (1) A variable-speed traverse motion, combined with a backlash-preventer motion and adjustable to the length of the traverse, is applied to prevent unequal wearing of leather top rolls. (2) Top-roll bearings are lowered to permit easier cleaning of top-roll trunions. Front bearings are milled at such an angle as to give greater clearance and facilitate cleaning with a minimum of danger to the fingers. (3) Top of the bolster is beveled, top edge of bobbin gear rounded, driving-dog chamfered on top—all designed to prevent cutting inside of bobbin when it is placed in position to receive roving, or after doffing has been completed. (4) A deep recess is sunk in the bobbin gear to aid in manual gripping. The top flat casing is in a position designed to prevent lint gathering about the barrel of the bobbin gear and, at the same time, to permit removal of the gear for oiling the bolster collar without disturbing the casing. (5) An innovation in skip-gear construction is a flexible spiral spring which holds it in position. (6) The top cone is provided with a removable section, secured by a flexible coupling, to permit application of endless belts, with the cone in position. (See illustration.) (7) Crown-gear bearing is adjustable to variation of teeth in crown gear. (8) Chain pulleys, used in connection with counterbalance weights, are increased in diameter, and studs are equipped with pressure gun fittings. Pulleys are designed to turn easily on the studs, so as to avoid danger of flat places forming. The loose pulley runs on a sleeve, integral with the yoke box supporting pulley-arbor, to prevent turning when bolt is on tight pulley. (9) Truck guard is replaced with a new type outrigger.

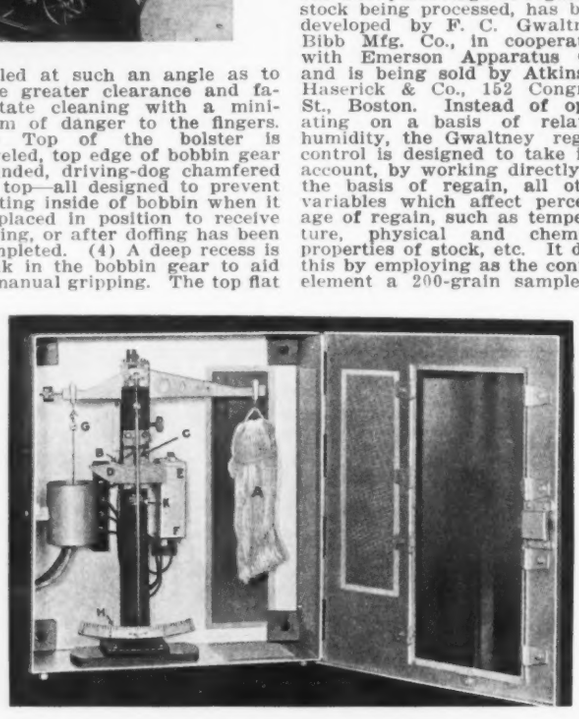


Improved Winders

In order to eliminate uneven spool-ends, chiefly due to vibration of traverse-rods and connecting parts, Sipp-Eastwood Corp., Paterson, N. J., has equipped its single- and double-deck winders with a traverse-motion designed to eliminate jar and vibration and insure absolute rigidity. The improved mechanism consists of metal carriages on each side of the machine, which slide on bars fastened rigidly to the main frame. The outer end of the bars, braced crosswise and vertically, holds the traverse gear and cam studs. The smoother action is said to permit greater speeds and cross-winding of spools.

Regain Control

An automatic humidifier control, designed to maintain a constant percentage of regain in stock being processed, has been developed by F. C. Gwaltney, Bibb Mfg. Co., in cooperation with Emerson Apparatus Co., and is being sold by Atkinson, Haserick & Co., 152 Congress St., Boston. Instead of operating on a basis of relative humidity, the Gwaltney regain control is designed to take into account, by working directly on the basis of regain, all other variables which affect percentage of regain, such as temperature, physical and chemical properties of stock, etc. It does this by employing as the control element a 200-grain sample of the stock in process, the weight of which varies as it loses or absorbs moisture. This variation of weight causes, by electrical means, the opening or closing of humidifier valves. For testing laboratories and cotton sampling rooms, the control is designed for de-humidification as well as humidification. The control is said to be accurate to 0.1%.



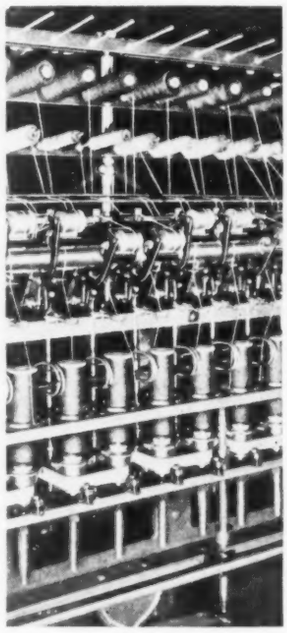
The instrument is illustrated herewith. When the element *A* loses weight, the wire *B* from the pointer *C*, fixed near the center of the beam, touches the surface of mercury in the trough *D* and causes an electric current to energize the relay *E* (covered). This in turn throws a double-throw switch *F* (covered), completing the circuit to open the humidifier valve. The gaining of weight by the element has the opposite effect. The small percentage weight *G* indicates the percentage of regain desired. The scale *H* measures the percentage of regain in the element above or below that indicated on the percentage weight *G*. The percentage in the element at which the humidifier valves will open or close may be regulated by changing the percentage weight *G* or by adjusting the mercury trough upward or downward by means of the thumb nut *K*. Means are provided for calibrating the balance and for raising the beam off its knife edge and locking it. Vibration is minimized by means of the cup filled with oil in which a disk is suspended from the stirrup at the left end of the beam.

Wrap-Stripe Attachment

The knitting of low-priced genuine wrap-stripe hosiery can now be undertaken on Banner plain machines and Banner 12-step machines by means of a new attachment developed by Hemphill Co., Pawtucket, R. I. The attachment can be used for converting both low- and high-cylinder machines to wrap-stripe knitting. It was brought out to supplement the regular 19-independent-step wrap-stripe machine which knits color within color, color beside color, and has other features especially designed for knitting the high-priced wrap-stripe numbers. The attachment is not equipped with these special features and is designed especially for knitting hosiery to be sold in the lower price brackets. It is built with six steps and twelve colors for low-cylinder machines of both plain and 12-step types, while the attachment for high-cylinder machines has eight steps and twelve colors. Attachments for both cylinder heights have dual selection on 48-move pattern drums, permitting pattern changes between clock head and fork in addition to changes in the vertical design.

Modified Twisters for Worsted Yarns

Whitin Machine Works, Whitinsville, Mass., has made recently certain structural changes in Models C and L twisters so as to make them applicable to worsted yarns. The two machines, while designed to twist different types of yarn, have many mechanical features in common, including the following: Individual motor drive with V-belt transmission; high-capacity, tempered-steel spindles with tape drives; large diameter Crys-steel, vertical, auto-lubricated rings designed to permit spindle speeds above 5,000 r.p.m.; automatic, single- and ply-yarn traps which, with the



large packages, tend to reduce number of knots to a minimum; fiber-head enameled spools designed to withstand steaming; twister-spools built to hold 18 to 22 oz. yarn; ball-bearing creel-spindles.

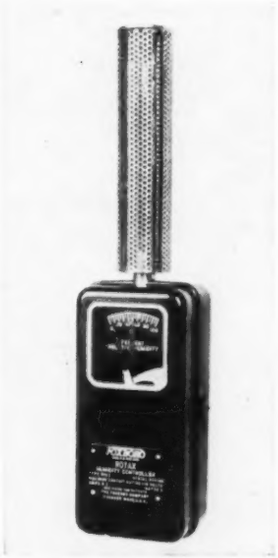
Model C twister is designed to twist six-ply yarns, although usually limited to four-ply, and is equipped with 100 spindles per side, 4-in. rings, 5½-in. gage, and an 8-in. traverse. Manufacturers state that one operative can easily tend 200 spindles, or one full-length machine. One advantage claimed for the twister is that all knots are tied in the single yarns, eliminating ply-yarn knots and improving the finished cloth. The most important feature of the twister, however, is probably the selective type trap-motion shown in the illustration. When a break or run-out occurs at the supply package, a pigtail detector trips the double-roll cradle allowing it to drop forward and disengage certain rolls, which automatically stops delivery of yarn at this point. A braking motion, which has no effect on the operation of the spindle or on the speeds of the other three spindles, quickly stops the rotating package and tends to keep the twist uniform. The trap-motion is said to be timed to prevent loose ends from entering the rolls.

Model L twister is designed to twist 8s to 40s, straight, two-ply worsted yarn, and is equipped with 200 spindles per side, 4 or 4½ in. rings, 5½ in. gage, and an 8 and 9 in. traverse. Manufacturers state that one operative can easily tend three or four machines or 600 to 800 spindles. An advantage claimed for this twister is that it can be arranged to take double yarn from a single package or single yarn from individual packages. Probably, however, the most important feature of the twister is the stop motion, as in the case of Model C.

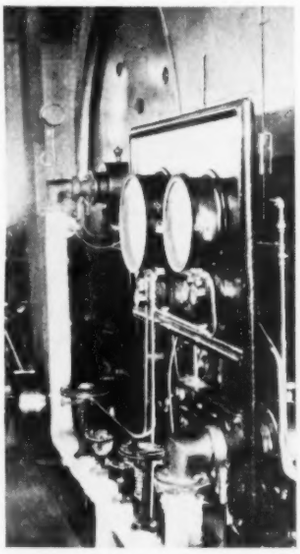
The two strands of single yarn or double yarn are drawn from a supply-package, turning on a ball-bearing creel-spindle, through a traversing yarn guide to the self-weighted top roll which revolves on an individual sleeve. The yarn takes the twist as it leaves this roll and passes to the ring and traveler through a porcelain guide set in a cast-iron guide-arm. The traveler weight and yarn are in such close balance that whenever an end breaks or runs out, the traveler should immediately break the remaining single strand. When this occurs, rotation of the sleeve is automatically stopped and delivery of the yarn ceases. The position of the stop-motion is held, and the spindle and package continue to rotate until the operative presses on the knee-brake, stopping the spindle while the ends are tied in. When pressure on the knee-brake is removed, an internal spiral spring presses the sleeve to the right until it engages the lug of the roll. Roll and sleeve begin to turn and delivery of the yarn to the spindle is resumed.

Slasher and Humidity Control Instruments

Two recent developments which Foxboro Co., Foxboro, Mass., had planned to exhibit at the Southern Textile Exposition are the slasher control and the relative-humidity controller shown in the accompanying illustrations. The feature of the slasher control is that it is designed to regulate the four important factors of temperature of size in size kettle, temperature of size in size box, level of size in size box, and temperature of the drying cylinders.



The Rotax relative humidity controller is designed for use in mills where a rugged, electrically operated controller is required to operate spray valves or other humidity and air-conditioning equipment. The controlling element is of the membrane type, with a range of 0 to 100% relative humidity. Either



solenoid- or motor-operated and two-position or three-position valves can be supplied with the controller. Both indicating and recording types of controllers are available.

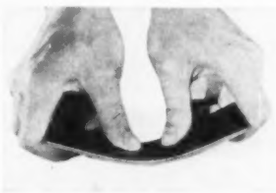
Felt-Protected Ball Bearings

Completely inclosed, felt-protected ball bearings of the new 7,000-p and 77,000 series are among the developments which Norma - Hoffmann Bearings Corp., Stamford, Conn., planned to feature last month at the Southern Textile Exposition. The 7,000-p series Greaseal bearing is of the closed radial type with side shield and felt protecting seal at one side. The inner ring is recessed to form a labyrinth with the felt seal and is slightly inset with respect to the outer ring at the opposite side. This bearing is equipped with a sturdy, pressed-steel retainer, and has a large grease reservoir which is packed full of lubricant before shipment. The 77,000 Series bearing has a double felt protecting shield.

Among the advantages cited for the Greaseal bearings are the following: the felt seal makes unnecessary the machining of outer face of housings, and drilling and tapping for screws; no closure caps or screws are needed; assembly is speeded up; mounting is simplified and more compact; positive protection is provided against dirt or other foreign matter; added assurance is given against "dry" bearings due to loss of lubricant.

Vibration-Absorbing Material

To meet the need for a product embodying axial resiliency, strength, and rigidity, Synthane Corp., Oaks, Pa., is now manufacturing, under Bakelite Corp., Bound Brook, N. J., patents, a new material consisting of layers of soft rubber "sandwiched" between sheets of "Bakelite Laminated." The "sandwiches" are recommended by the manufacturers particularly for gasket applications, vibration-absorbing machine mountings, etc.



Portable Blower

A portable electric blower, designed to remove dust, lint, and other deposits from textile machinery, electric motors, etc., has been introduced by Clements Mfg. Co., Chicago. This blower is readily converted into a suction cleaner or sprayer, requires no installation, and may be easily carried in one hand.

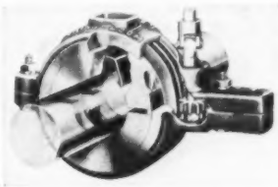
Synthetic Product for Thread Guides, etc.

A boron carbide product, said to be the hardest synthetic material ever produced by man, was announced by Raymond R. Ridgeway, of the research laboratories of Norton Co., Worcester, Mass., at a recent meeting of the Electro Chemical Society.

In the textile industry, the new product already has found several important uses; e.g., thread guides, spindles on grinder machines, etc. Manufacturers especially recommend it for thread guides to be used in connection with certain types of delustered rayon which have a high abrasive action.

Compression Clamp

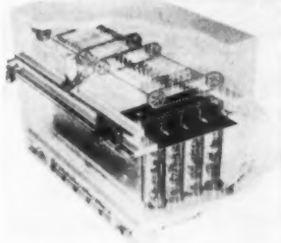
A compression clamp, which allows the drive-worm of a pick counter to be installed without drilling the loom shaft, has been developed by Veeder-Root, Inc., Hartford, Conn. Application is extremely simple, a clamp being placed in each half of the cored worm, the pieces of which are screwed together around the



shaft, as shown in the illustration. When pressure is applied (screwdriver is only tool necessary), the hardened teeth are designed to bite into the shaft and lock the worm in place ready for housing. The drive unit, by means of the clamps, can be attached without removing the warp from the loom. This factor, coupled with elimination of drilling the shaft, is said to effect a considerable saving in time and installation costs.

Sedimentation Equipment for Water-Purification and Waste-Disposal Plants

A radical departure from present methods of handling sedimentation problems in the water-purification and industrial-waste-treatment fields is made possible by the Infilco Super-Settler, announced recently by International Filter Co., 59 East Van Buren St., Chicago. The Super-Settler employs a rectangular tank, usually of reinforced concrete. A vertical partition wall separating the inlet canal and the settling compartments is built



through the tank adjacent to one side, and parallel with the longer dimension. The larger portion of the tank thus divided, is separated horizontally into the desired number of shallow settling compartments by the installation of trays upon which the solids settle while the water is flowing through. Flow from the inlet canal is equally divided between all compartments by longitudinal slots through the partition wall. Each compartment has its individual outlet pipe extending across the tank's width. Inlet openings, closely spaced, are formed in the top of the pipes, which are connected to outlet branches, one branch from each compartment leading to an individually controlled weir chamber in the outlet canal.

A sludge scraper arm attached to an upright, is inserted through each inlet slot

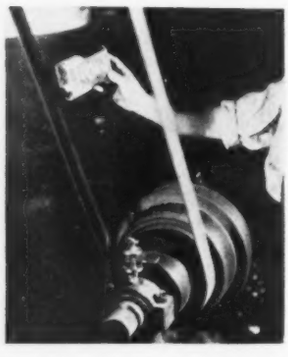
and extends across the length of the tray. These arms are moved slowly back and forth across the width of the tank by a motor-driven carriage, and move the sludge ahead of them to the ends of the trays, where it passes over aprons into sludge sumps. It then may be withdrawn continuously or intermittently as desired over the control weirs in the sludge wells, or it may be pumped directly from the sumps and wasted, or a portion returned to the treatment, as desired.

Advantages cited include the following:

Maximum utilization of the tank volume is obtained by automatic control over every portion of the entire tank; settling area can be increased to any desired capacity without changing the length of flow of the material; the Super-Settler requires space approximately one-third the volume required by usual settling basins equipped with sludge removal mechanisms; sludge collecting and moving mechanism is extremely simple, and positive in operation; appreciable savings on installation and operating costs are possible; and a Super-Settler installation can frequently be made by installing the partition walls, trays, piping, and sludge scraper mechanism in an existing settling tank.

Rubber-Belt Dressing

A liquid dressing has been developed by B. F. Goodrich Co., Akron, Ohio, designed to increase pulley-grip and horsepower delivery of rubber belts. It is stated that the new belt dressing has no tendency to



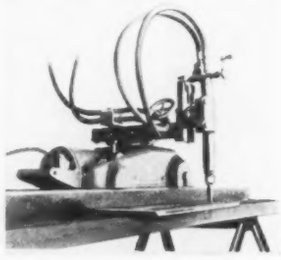
penetrate and deteriorate the body of the belt, merely softening the rubber surface.

Lubrication Seal

Development of a new oil or grease seal for application to all types of machinery embodying shafts, is announced by National Motor Bearing Co., Oakland, Calif. The seal, known as Type BB, consists of an outer steel case with a press-fit accuracy of 0.002 in. tolerance, plus or minus, on the diameter, and an equalizing annular garter-spring within to provide a uniform continuous contact, pressing against the sealing member at all points. The sealing member is usually made of a processed leather designed to suit different conditions of temperature, peripheral speeds, chemical activity, etc.

Cutting Machine

An oxy-acetylene cutting machine, known as the Oxweld Monitor, is announced by Linde Air Products Co., 205 East 42nd St., New York. The machine is designed to do automatic straight-line cutting of practically unlimited length, straight-



bevel cutting, two bevels at a time if desired, plate-edge preparation, circle or ring cutting of diameters up to 100 in., and the cutting of curved or irregular shapes. One blowpipe, C-7, is supplied as standard equipment, but C-22 may be substituted for heavier work and certain flame-machining operations. Two blowpipes may be used simultaneously, and the slide for blowpipe holders is so constructed that it may be swung into any horizontal position over a working arc of 250°. It is stated that any speed from 2 to 48 in. per min. can be obtained.

Improved Valves

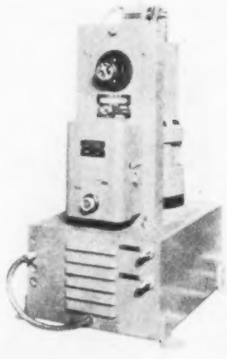
Jenkins Bros., 80 White St., New York, announces a new line of improved bronze regrind-renew valves made in globe and angle patterns, and additions to its line of bronze gate valves.

The new line is fitted with a nickel-alloy seat-ring and disk or plug, the diameter of the disk or plug being scientifically correct in relation to the seat in order to permit repeated regrinding without scoring. The valves are so designed that, when fully open, no fluid can contact the operating threads.

Advantages claimed for additions to the gate valve line include: bonnet-threads in contact with spindle at all time; electric-furnace bronze bodies; guides cast in body to keep wedge in line for perfect seating; double-faced solid wedge out of line of flow when valve is fully opened; extra deep stuffing-box; valves may be repacked under full pressure when in open position.

Arc Welder

Demand for an inexpensive arc welder for relatively light work has resulted in development of an a-c motor-driven welder, employing a 25-volt arc with a current range of 20 to 100 amperes, by Lincoln Electric Co., Cleveland, Ohio. Manufacturers assert that this unit, SA 75, is the first welder ever built which will deliver as low as 20 amperes at the arc without the use of auxiliary devices.



NEW PUBLICATIONS

Uniform Cost Methods; National Association of Finishers of Textile Fabrics $1.00.

Reviewed by Winn W. Chase.

Use of the so-called standard or predetermined cost system is advocated in the manual, "Uniform Cost Methods," issued last month by the National Association of Finishers of Textile Fabrics. Based on an extensive study by the cost committee of the association and prepared under the immediate direction of Oscar B. Graichen, cost accountant for the N.A.F.T.F., the book outlines a uniform method of cost finding and control developed to meet the particular needs of the cotton finishing industry. In a foreword, Albert Scott, president of the finishers' association, calls attention to the present chaos in finishing prices due to lack of accurate cost information and urges that every finisher follow the method outlined in the manual and base selling prices on the costs so obtained.

Aside from one amazing section entitled "Normal Production," in which the theory of profits is discussed and the recommendation is made that standard costs be figured on a 50-hr. week basis, the manual adheres closely to the orthodox methods and principles of cost finding now accepted by most of the leading cost engineers. Particular stress is placed on the factor of cost control.

In describing the establishment of a cost system, the manual states that the first and most important step is to make a proper departmental division of the plant. Departments in finishing plnats are classified as (1) producing departments, known as process centers; and (2) non-producing departments, known as expense centers. Manufacturing costs are then divid d into the three prime factors of direct labor, direct materials, and manufacturing expense or overhead.

The payroll is analyzed and distributed in accordance with the process and expense centers already established, and a standard labor cost is obtained for each process center or operation. Comparison of the actual labor cost with the standard labor cost is made weekly on a suitable form, thus giving the management at all times a measure of the labor efficiency.

Chemicals, dyes, etc., are charged directly to the lot of goods on which they are used. As a rule, other direct materials used in bleaching, mercerizing, starching, etc., are charged to the various process centers and their value charged to the product handled at a unit cost per pound; if desired, however, these also may be charged directly to the lots on which they are used. At the end of each accounting period, a recapitulation of formulas is made, the total consumption of each class of materials shown thereby is compared with the amount of materials consumed as disclosed by the control accounts in the general books, the percentage of variation is determined, and the formulas are so adjusted that total actual charges to lots will equal the consumption disclosed by the general books.

Overhead is broken down first into departmental expense, general overhead, and fixed charges. These items are further subdivided and are then distributed to each process center according to a well-thought-out plan which is described in detail. After careful consideration, the cost committee recommends that the debatable item of interest on investment or on any indebtedness be excluded from the unit costs.

Other items discussed include returns and re-runs, village and welfare property investments, subsidiary operations, selling and administrative expense, compiling and recording costs, and general ledger control of cost accounts. Sixteen forms for use in connection with the system are illustrated.

Plant managements installing the proposed system, or adjusting their present systems in accordance with it, are warned in the manual to avoid having this work done by employees not thoroughly experienced in this class of work and are urged to use the facilities offered by the finishers association or to obtain the services of recognized cost consultants.

In conclusion, this reviewer cannot refrain from commenting further on what he characterized earlier as an "amazing section" of the book. In this section, under the heading "Normal Production," we find such so-called "self-evident truths" as the following:

"First: The percentage of activity at which an industry can hope to operate depends upon the relation between the consuming demand and the production possibilities.

"Second: No individual plant can hope to operate over any appreciable period at a greater rate of activity than the industry as a whole, unless that plant attempts to secure business by debasing prices below a fair average level for the industry.

"Third: That the individual company engaged in a given industry can make an adequate profit only if the industry as a whole is on a reasonably profitable basis.

"Fourth: That it is to the advantage of an individual plant owner that prices should be based on the average conditions which exist in the industry."

This reviewer questions the accuracy of the second and fourth of these statements and believes that the third has certain limitations.

More important is the recommendation of the cost committee "that standard costs for the industry be figured on a 50-hr. week basis."

How an individual plant operating on one 40-hr. shift, or another plant operating two shifts for a total of 80 hr. weekly, can determine its own costs accurately on the basis of the industry's 50-hr. week average activity is beyond comprehension. It is the opinion of this writer that if it is to determine its costs accurately, each individual plant must do so on the basis of its own normal production, averaged over a reasonable length of time.

Beyond the New Deal; by David Lawrence; Whittlesey House, McGraw-Hill Book Co., Inc., New York; $2.50.

This is open season for audits of the New Deal—and no one should resent that fact. The more, the better.

Mr. Lawrence, editor of the *United States News*, is known nationally through his radio broadcasts and his syndicated writings in daily newspapers. His publishers describe him as "an intelligent conservative who analyzes the New Deal and its implications to government and individuals," and notes that he gives credit to the New Deal where credit is due "but is much

concerned about the future." This reviewer finds it necessary to add that Mr. Lawrence's attitude toward the Administration is not a friendly one. That fact should not impair the interest of the book, since both extremes in views should be secured, but at the same time a reader is entitled to know in advance which attitude he is getting.

Mr. Lawrence brings to bear a particularly fortunate background. He knows Washington as few others do, and has had years of training as an observer. His book should be read by everyone, irrespective of individual point of view.

Rayon Dyeing and Finishing; By B. L. Hathorne, published by Howes Publishing Co. Price $3.

This book, the subject matter of which appeared in serial form in 1933, has been published with the idea of providing in one volume a brief discussion of the dyeing and finishing of rayon yarn and fabrics. Subjects covered are as follows: Methods of rayon production; rayon from the viewpoint of the textile chemist; delustered rayon (written by Henry Green); physical aspects of regenerated cellulose rayon dyeing; dyeing and finishing of rayon yarn, hosiery; and circular-knit tricot, milanese, and woven fabrics. No attempt has been made to present facts other than those which for the most part are common knowledge to those actively engaged in each of the particular fields discussed. For this reason, the book will be of chief interest to those who have had no practical experience in dyeing or finishing of rayon. On the other hand, students of textile chemistry and dyeing, young men just entering the dyeing field, and experienced dyers whose work has been confined to textiles other than rayon will find it of real value. This is due in large part to the fact that the author has included procedures and formulas for processing various types of rayon yarns and fabrics. Mr. Hathorne, who formerly was in charge of the technical laboratory of Tubize Chatillon Corp. and now is acting as a textile consultant, is recognized as one of the leading authorities in this country on the dyeing and finishing of rayon.

Since the book makes no claim to be a comprehensive treatment of the subject of rayon dyeing and finishing, it would be unjust in this criticism to point out its "errors of omission." The fact remains, however, that there is still need for a book giving in detail the large amount of worthwhile data on processing of rayon yarns and fabrics which is scattered through our technical literature, but has not yet been made available in any one volume. It should be mentioned also—although it is due to no fault of the author—that abandonment of the commercial production of nitrocellulose yarn since the subject matter of the book was first written has rendered obsolete those sections dealing with this product. The merits of this little book far outweigh its shortcomings, and we are glad to recommend it as the best book now available for anyone who wishes to gain a general knowledge of rayon dyeing and finishing.

Davison's Textile Blue Book; Davison Publishing Co., New York; Various editions, $4.00, $5.00 and $7.50.

Davison's Textile Blue Book as of July 30, 1934, reports 8,803 separate textile plants and 15,345 dealers revised to date. Looms, spindles, cards, combs and other machinery have been tabulated by States and shown in special tables. The publishers state that whereas corrections in lines ordinarily average 20%, this year they are up to 63%.

The office edition contains a classified directory of mills and the textile buyer's guide.

The Economic Security of the People; a study outline prepared by the Industrial Dept. of the National Council of Young Men's Christian Associations; Association Press, New York; 48 pages; 25c.

The vital subject of economic security and how possible of attainment is considered in this pamphlet in an analysis of 20 questions. There are four chapters—1. Some Challenging Facts; 2. Unemployment Compensation; 3. Old-Age Dependency; 4. Health Insurance. Interesting side-lights are given in brief summaries of experiments in various countries in progressive social legislation, proposals from well informed sources, and plans now in effect in this country.

Standard Cost Control for Cotton Spinning. By John Ryan and John S. Taylor. Published by Harlequin Press Co., Ltd., Manchester, England. Price 5s.

This manual is intended chiefly to make available at a price within the reach of the average student a comprehensive treatment of the subject of cotton yarn costing. In this country, it will be of chief interest to cost accountants who wish to compare their own methods with those followed in England. A brief, but interesting, chapter not usually found in cost manuals of this type is that on "Investigation of Justification for Capital Expenditure."

Chemical Guide-Book for 1934. Published by Chemical Markets, Inc., New York. Price, $2.

The tenth edition of this guide book deserves a place on the desk of every buyer of chemicals. Of particular value is the buying guide and directory of chemical and allied products arranged alphabetically, with name and address of sources of supply, the chemical and physical characteristics of each product, grades, containers, shipping regulations, tariff, etc. Other sections of the book include a geographical directory of the chemical and allied industries; the high and low prices for 1932 and 1933 of over 1,500 chemicals; a catalog of leading chemical firms; and a list of trade associations.

Codes, Cartels, National Planning—The Road to Economic Stability; by Bruno Burn; McGraw-Hill Book Co., Inc., New York; $4.00.

Interest in European cartels has been stimultaed by the NIRA. Dr. Burn has had 20 years' experience in the field of cartels in Germany. He has written this book in the hope that the experience of European countries in substituting the principle of cooperation for that of reckless competition may serve as a helpful guide to American business and the national administration in their present situation.

Numerous charts, supplemented by a description of methods employed in regulating production and marketing, and the reproduction of various cartel agreements constitute a wealth of informative material for the creation of a machinery for industrial self-administration.

America's Hour of Decision; by Glenn Frank; Whittlesey House, New York; $2.50.

Here is the main question which the author is trying to answer in this book: Can we ride the storm, and make the revisions of political and economic policy which the effective operation of an age of plenty requires, without subjecting the American order of private enterprise and political liberty to subversive changes that may bring ultimate ruin in the wake of a delusive recovery

And that, it must be admitted, is some question!

The publishers state that the book is not a partisan document. And we believe the publishers are right. Dr. Frank, of course, will prove to be too liberal for the ultra-conservatives, and too conservative for the radicals. But, on the whole, he presents an intelligent point of view which none can afford to miss.

Do we know what we want? he asks. And this question is a challenge which cannot be dodged.

Altogether, this is an important contribution to the literature on present trends toward change in our national economy and psychology. And, since Dr. Frank writes beautifully, it is easy to take.

BUSINESS NEWS

U S Bobbin & Shuttle Co., with main office at Manchester, N. H., reopened its Goffston, N. H., plant, which had been closed for three years, on Oct. 15, making a total of seven plants in operation. The company has also announced that Albert R. Breen will be located at 2650 Coyne St., Chicago, and will represent the company as sales agent.

Albert R. Breen, recently field engineer for the **Universal Winding Co.,** is opening an office at 2650 Coyne Ave., Chicago, Ill. He will represent the Universal Winding Co. in Michigan, Indiana, Illinois, Wisconsin, Minnesota, and Missouri. Mr. Breen is well known in this territory because of his connections as sales agent for the Universal Winding Co. over a period of twelve years prior to the time they closed their Chicago office.

Davis & Furber Machine Co., North Andover, Mass., is offering $300 in prizes for the best letters on methods of applying fillet clothing to the cylinders and doffers of woolen and worsted cards, with special reference to the tension applied. Details of contest, which closes Dec. 1, are given in November D. & F. *News*

Joseph Noone's Sons Co., Peterborough, N. H., had a loom which was built in 1812 as part of its exhibit at an industrial display held in Peterborough Oct. 18 to 20. The loom was complete and in working condition, and served to show how cloth was woven in the old days.

Canadian Industries, Ltd., is making arrangements for the erection of a hydrogen-peroxide plant at Shawinigan Falls, Que. It is likely that an English firm will handle the finances and superintend the installation of machinery.

Textile Specialty Co., Greensboro, N. C., has moved to its new plant on Victor Place at King Street.

National Adhesives Corp. expects this month to start large scale production in a new $250,000 addition to its main factory at Dunellen, N. J. This new plant, complete in itself, has been built expressly to house the equipment for a number of new starch refining and dextrinizing processes developed by the company. While the company has for years manufactured many of its own raw materials, it will henceforward be independent of any outside manufacturers for its basic products. The company now operates seven plants.

Major A. Erland Goyette, proprietor of Joseph Noone's Sons Co., Peterborough, N. H., was elected president of the New Hampshire Manufacturers Association at the annual meeting on Oct. 10. Major Goyette succeeds **Laurence B. Holt,** general manager of Scott & Williams, Inc., Laconia, N. H.

W. L. Nicholson, formerly with Globe Mills Co., Mount Holly, N. C., has become southern sales representative for Whitinsville Spinning Ring Co., succeeding Webb Durham, who recently resigned to join Winnsboro Mills, Stark branch, Hogansville, Ga.

Spencer Thermostat Co., Attleboro, Mass., has announced the appointment of V. G. Vaughan as manager.

Solvay Sales Corp. has opened a new office in the Petroleum Bldg., Houston, Texas.

United States Testing Co., Hoboken, N. J., has opened a new Manhattan laboratory at 1450 Broadway, New York, a location convenient to the textile and garment centers, to the retail trade, and to the code-authority offices. The laboratory is equipped for raw-silk evenness, cleanness, and neatness tests, among others. It will be in charge of C. J. Brick, formerly of the North American Laboratory.

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Business Literature

Finishing Machinery. Birch Bros., Inc., Somerville, Mass. Two comprehensive loose-leaf catalogs—one on cotton and the other on woolen and worsted dyeing and finishing equipment—describing and illustrating wide range of machines manufactured and imported by this company.

Corrosion- and Heat-Resisting Steels. Crucible Steel Co. of America, 405 Lexington Ave., New York. Illustrated catalog showing uses of Rezistal chromium and chromium-nickel steels and giving extensive data on their properties.

Dyestuffs. General Dyestuff Corp., 230 Fifth Ave., New York. Color card illustrating wide range of Naphtol combinations on cotton yarn and giving principal fastness properties.

Electric Heaters. Harold E. Trent Co., 618 N. 54th St., Philadelphia. Leaflet describing electric fan and air heaters.

Bronze-Surfacing. Linde Air Products Co., 30 E. 42nd St., New York. Booklet, "Maintenance of Reciprocating Parts," describing oxy-acetylene process of bronze-surfacing.

Electric Controls. Allen-Bradley Co., 1326 S. 2nd St., Milwaukee, Wis. Data sheets for Allen-Bradley loose leaf control catalog.

Nickel-Clad Steel. Lukens Steel Co., Coatesville, Pa. Illustrated leaflet describing Nickel-Clad steel containers designed to resist corrosive action of textile chemicals.

Paint. Pittsburgh Plate Glass Co., Grant Bldg., Pittsburgh, Pa. Booklet describing facilities for manufacturing paint and list of paint products.

Synthetic Organic Chemicals. Carbide & Carbon Chemicals Corp., 30 East 42nd St., New York. Sixth edition of 77-page summary of synthetic organic products of company.

High-Speed Looms. Crompton & Knowles Loom Works, Worcester, Mass. Leaflet inviting inspection of new looms during October and November, at Worcester, Mass., because of postponement of Southern Textile Exposition at Greenville, S. C.

Roving and Picking. Saco-Lowell Shops, 147 Milk St., Boston. October issue of "Saco-Lowell Bulletin" containing articles on new controlled-draft roving and cleaning and blending reserve.

TEXTILE WORLD'S

Cotton Digest

EVER since the Cotton-Textile Institute was formed in 1926, there has been discussion concerning the fate of the two major associations, the N. A. C. M. and the A. C. M. A. We have always held that there was a continuing need for their existence; that they had certain functions which the Institute could not perform as satisfactorily, and which, in fact, it should not be asked to perform if it is to achieve its primary objectives. Addition of trade-association duties would merely dilute the Institute's major job.

We feel, further, that the meetings held by both the N. A. C. M. and A. C. M. A. during the last month represent a type of effort which those organizations should pursue—and consequently reinforce the view expressed above.

Incidentally, those were closed meetings. Our professional interest as a journalist naturally inclines us to a preference for open meetings. Our broader interest as one concerned with the progress of the industry, however, impels us to the belief that there are times when frank discussion behind closed doors is the only means of bringing out the best thinking of the industry.

We shall submerge our self-interest still further by stating that participants in closed meetings should maintain the confidential nature of such gatherings when they recess to the lobbies. Otherwise, garbled bits of information come out and often build up an erroneous impression. Witness some of the aftermath of the Greenville meeting!

If a meeting is open, the press and public get the whole story. If it is closed—and, we repeat, there is occasionally need for this type—it should be closed all the way, in fairness to all concerned.—*Editor.*

Institute Meeting Dec. 5

The annual meeting of the Cotton-Textile Institute will be held at the Biltmore Hotel, New York, on Wednesday, Dec. 5.

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Yarn Group Endorses Limited Operations

At a recent meeting of the Cotton Yarn Merchants' Association, a unanimously adopted resolution was forwarded to the Cotton Textile Code Authority urging that "such provisions for limitation of hours of operation of productive machinery as embodied in the code of fair competition for the cotton textile industry be continued without change for the duration of the National Industrial Recovery Act."

•

Demand Must Be Increased, Says George Sloan

Need for increased demand to maintain the present payroll and employment gains in cotton textile mills was emphasized in a statement issued last month by George A. Sloan. He urged "redoubled efforts to stimulate domestic consumption, develop new uses for cotton, and recapture lost foreign markets."

In connection with the latter, he pointed out that exports of cotton piece goods have fallen off from over 500,000,000 sq.yd. in such years as 1925-27 to 128,230,000 sq.yd. during the first half of 1934. Mr. Sloan said that one specific way in which some of the lost business might be regained would be for the Philippine Legislature to give American textiles a protective tariff.

The remainder of the statement dealt largely with a description of some of the work being done by the research and promotional staff of the Institute in an effort to increase demand for cotton.

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A.C.M.A. Again Flays Processing Tax

"The cotton textile industry is bleeding internally today, and its most dangerous wound has resulted from the blow dealt it by the imposition of the processing tax," concluded a letter to Secretary Wallace from the American Cotton Manufacturers Association. The association also pointed out that the tax "amounts to a sales tax on textiles of 10 to 12% for the class of goods most largely manufactured in the South." It further suggested that a "more equitable plan would be to distribute the cost of these benefits (bounties, rentals, etc.) upon all classes of business and all classes of citizens by paying the same out of the Treasury."

National Cotton Week

The fifth annual National Cotton Week will be observed from May 6 to 11, 1935, according to George A. Sloan, president, Cotton-Textile Institute. Comments from leading merchants indicate an almost universal optimism for the 1935 cotton season.

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Cotton Adjustment to Continue in 1935

In order that more than 1,000,000 cotton producers may proceed with farming plans for next season, Secretary Wallace has announced that the cotton adjustment program will definitely continue into the 1935 season.

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Gray Goods Uncertain

October gray goods market opened dull and uneasy, probably due to the effects of lower silver and larger private estimates. A spurt developed just before Columbus Day and print cloth prices stiffened, only to ease off during the remainder of the month. An increased demand for ginghams caused some observers to wonder if the trend could possibly be swinging in that direction.

•

Yarn Market Mediocre

October yarn market opened rather slow with some evidence of distress sales. Optimism became pronounced during the middle of the month, with some observers insisting that spinners should hold down production so as to further the cheerfulness. The month closed with easing of prices, despite slightly increased sales.

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Pacific Takes Over Borden Converting

The absorption, by the Pacific Mills, of the merchandising of M. C. D. Borden textiles represented one of the most interesting and important developments in the market in some time. Official announcement was made in the following laconic statement: "M. C. D. Borden & Sons Inc. announce that on and after Nov. 1 all merchandise will be sold and charged from the offices of the Pacific Mills at 214 Church St., New York."

The immediate effect anticipated from this move was stabilization in the market for printed cotton textiles, which market incidentally has been badly in need of this factor.

The cotton goods and printing divisions of the American Printing Co., Fall River, will close down after stock in process has been run out.

A new division of Pacific Mills, known as the American Print Department, has been formed, headed by Edmund S. Cruttenden, who has been with Borden since 1912. It is made clear that the new arrangement applies only to the merchandising and is not a corporate merger. "No bricks and mortar changed hands" is the way this was expressed in one section of the market. Although many expect an actual merger to take

place eventually, this has not yet taken place.

The size and background of the two participants of this deal made it of particular interest and all comment was to the effect that the move was a constructive one so far as the general market is concerned.

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Census Shows Increased Cotton Goods Output

Average number of employees engaged in the manufacture of cotton goods during 1933 was 378,828, or 14.8% greater than that for 1931 which was 329,962. Value of cotton goods produced in 1933 was $874,580,871 against $817,424,509 in 1931. The number of establishments was lower, however, being 1,057 in 1933 and 1,140 in 1931.

The 1933 total product is made up as follows: woven goods over 12 inches in width, 8,103,717,584 sq.yd. valued at $653,699,246; cotton sale yarns, 498,465,743 lb., valued at $130,944,384; cotton thread, 27,754,889 lb., valued at $30,371,863; cotton waste for sale, 361,031,356 lb., valued at $12,769,527; other products, $46,795,851.

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Associational Activities

Annual meeting of the North Carolina Cotton Manufacturers' Association will be held Nov. 22 and 23 at the Carolina Hotel, Pinehurst, N. C.

Fall meeting of Textile Operating Executives of Georgia, postponed from September, was held Nov. 10 at the Chemistry Building, Georgia Tech, Atlanta, Ga. The session was devoted to a discussion of slashing and weaving problems. Details will be published next month.

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Strike Slows Spindles

Statistics of particular interest to cotton manufacturers, showing September operation and the raw material situation were:

Spindle activity	54.3% capacity or 3,716,261,653 spindle hours
Cotton consumed	295,960 bales
Cotton imported for consumption	7,870 bales
Cotton exported (excluding linters)	479,861 bales
Cotton ginned prior Oct. 1	4,958,346 bales
Cotton ginned prior Oct. 18	6,748,223 bales
Crop estimate as of Nov. 1	**9,634,000 bales**

August operations for comparison:

Spindle activity	76.8% capacity or 5,752,899,618 spindle hours
Cotton consumed	420,949 bales
Cotton imported for consumption	10,682 bales
Cotton exported (excluding linters)	267,562 bales

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Raw Cotton Notes

An indicated U. S. production of 9,443,000 bales (500 lb. gross) cotton, conditions 55.9% normal Oct. 1, was reported Oct. 8 by Dept. of Agriculture.

World consumption of American cotton during last year declined 450,000 bales in the United States and 181,000 bales in foreign countries, according to U. S. Bureau of Agricultural Economics.

Southern cotton merchants continue to complain that the Federal 12c. loan has virtually stopped all sales of cotton in the South.

Consumption of all growths of cotton from Aug. 1, 1933, to July 31, 1934, was the largest in five seasons, according to N. Y. Cotton Exchange Service—25,261,000 bales.

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COTTON IN THIS ISSUE

	page
Mill Men, North and South, Meet Heart-to-Heart	58
Employee Relations Platform	59
Stretch-Out Formula Must Be Flexible	61
Work Assignment Regulations Set by President	63
Short Cut to Twist; Turns Per Inch by New Method	65
Strike Aftermath—What Workers Think About It	67
Committee D-13 Favors "S-Z Twist"	70
Export Market for American Cotton Threatened	72
Cottons by Wool Methods; All-Cottons and Mixtures	73
Narrow Fabric Weaves—Survey of Types	74
Top and Bottom Creel Cleaner	96
How Much Yarn Will a Beam Hold?	96
Minimizing Pulling-in of Filling	97
Slub-Catcher Settings	98
Nubs in Cotton and Wool Goods	99
Moisture-Content Control System	102
Improved Roving Frame	102
Slasher and Humidity Control Instruments	103

Cotton Mill News

Alabama Braid Co., Gadsden, Ala., local plant has been sold to C. V. Offray and associates of New York. Mr. Offray will be president of the new company and Benj. Kahn will be vice-president and manager.

Kendall Co. opened its New Bedford, Mass., unit in mid-October. This is the former Holmes Mill. A battery of 800 modern Draper automatic looms has been installed with 69,562 spindles and allied machinery. It will operate for the present on hospital gauze.

Granite Textile Corp., Midland Park, N. J., in reorganization, has obtained court approval of a plan which is equivalent to sale to the **Patex Corp.** which conducts a bleachery.

Garner Mills, Inc., West Haverstraw, N. Y., have been organized under direction of Vincent Barnao, 7805 Fifth Ave., Brooklyn, N. Y., to operate a spinning mill. New company is capitalized at 50 shares of stock, no par value. It is understood that space is being leased in the former plant of the Rockland Finishing Co., Garnersville, near West Haverstraw, and that equipment will be installed at early date. New company is represented by Milton H. Goldson, 1457 Broadway, New York, attorney.

Cannon Mills Co., plant No. 5, Concord, N. C., is replacing old spinning machinery with new Saco-Lowell equipment.

Proximity Cotton Mills, Greensboro, N. C., is installing 12,000 additional spindles, making it possible to operate 800 more looms in the plant on a second shift. Three hundred more workers will get employment.

White Oak Cotton Mills, Greensboro, N. C., is completing a $250,000 addition to the plant to house 18,000 additional spindles and furnish jobs for 700 more persons. When installation of the machinery has been completed within the near future, operation of 1,500 looms on a second shift will be begun. These looms are now operating on a single shift and are able to keep up with the carding and spinning departments. The plant addition is 415x138 ft., two stories.

Double Shoals Mill Co., Shelby, N. C., recently organized with capital of $50,000 by A. W. McMurray and J. Thomas Moore, both of Shelby, has taken over the mill of the Double Shoals Mfg. Co., lately sold at a public auction, and will begin operations at an early date. Improvements will be made in plant.

Lola Mills, Inc., Stanley, N. C., have been purchased from C. H. Potter, receiver, by group of new interests, headed by James A. Bangle, R. F. and I. E. Craig, Lowell, N. C. A new company is being organized to take over the Lola property; improvements will be made in mill, including equipment replacements and repairs. Plant will be continued for production of cotton yarns.

Carolina Textile Corp., Dillon, S. C., has been incorporated for $300,000 for the purpose of taking over property formerly belonging to the Carolina Textile Corp., of North Carolina. Martin L. Cannon is president, and E. H. Brown, secretary-treasurer.

Hartsville (S. C.) **Cotton Mill** has installed high-speed Barber-Colman spooling and warping equipment.

Neely-Travora, Inc., York, S. C., a group of cotton mills, have passed to the control of Maj. W. B. Moore and his son W. Bedford Moore. The younger Mr. Moore will be manager.

Manville-Jenckes Co., Providence, R. I., has sold all the machinery and supplies in the Globe Mill, Woonsocket, to Walter E. O'Hara, Fall River, Mass. The plant, closed since 1930, operated 39,024 spindles and 294 looms.

TEXTILE WORLD'S

Wool Digest

DESPITE the apathy with which the wool industry seems to regard promotion, there are a few firms and individuals which have kept the flag flying. One such is Eavenson & Levering Co. Year in and year out, it has hammered on this theme in its publication "Making the Grade With Wool." Although apparently a voice crying in the wilderness, it has not been a feeble one. This, from a recent number, is a sample:

"Obviously the people buy what they want, and they want what they want not particularly because the product is good for them (such as new clothes or books) but because they figure that possession of it will make them alluring, will inspire the envy of friends and neighbors, will enhance their importance. And it's just too bad, when stringent circumstances come along, for the industry that hasn't taken the trouble to make them want what the industry sells!"—*Editor.*

Men's Wear Worsteds Hit Soft Spot

The wool cloth price situation showed signs of ferment late in September and by mid-October the American Woolen reduced its worsteds by 2½ to 12½c. from opening. There has been slow movement on the part of clothiers and their supreme caution is responsible for the effort by selling agents to stimulate business by price bait.

There is much talk on the market to the effect that business means a loss to mills on the present basis. It is also frequently said that the trade is extremely sensitive to orders and that a price rise is going to occur with little encouragement. Clothiers are having difficulties of their own, and the fact that a prominent manufacturing-retailer handling garments from $30 to $50 is liquidating, suggests that he sees little encouragement for him in the future of this field. Doubtless the focus of business will be on the $25 suit.

Some fabric sellers are content to let the low-priced sellers go their way in the hope that once they are sold up with profitless business, ordering will step up to the higher price levels. The clothier is vitally interested in shaving the last 2½c. per yard off his fabric cost, despite the fact that this cost on a suit (about 8½c.) will have little bearing on the consumer's favor.

The American Woolen Co. is said to have narrowed the spread between base prices and those for volume orders so that the smaller user gets a better break and broader distribution is encouraged.

In some quarters men's wear ordering has been brisk and makers have scaled down orders because they are not selling beyond Jan. 1 at their lowest prices.

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Prices and Price Changes

American Woolen Co. on Oct. 18 revised spring prices downward 2½ to 12½c. on lines of worsteds, woolens remaining unchanged. New prices on a number of styles with difference from opening of a few weeks previous follow:

Range		Price	Down from Opening
131		$1.42½	$.07½
398		1.27½	
414-1		1.25	.05
8020		1.67½	.02½
9075		1.50	.02½
9613-1	unchanged	1.47½	
3844	unchanged	1.95	
9056		1.42½	.02½
9046		1.35	.12½
9120		1.40	.10
9078		1.47½	.02½
9265		1.47½	.05
9215		1.65	05
9000		1.50	05
9231		.32½	.12½
9001		1.30	.10
9236		1.55	.12½
9084		1.67½	.05
9080		1.45	.05
9082		1.55	.05
9264		.80	.10
9237		1.65	.15
4001		1.65	.05
9270		1.05	.05
9276		1.12½	.05

Penn State Worsted Co. is showing spring 1935 lines, 8½ to 15½ oz., at prices ranging from $1.50 to $2.37½.

Faulkner-Colony Co. is showing a wool crash at $1.30; also plain and fancy flannels at $1.50 to $2.70.

Botany Worsted Mills have introduced an 8½ oz. tropical worsted for men's wear under the brand, "Leaf Cloth," which has been confined for 1935 to Michaels, Stern & Co., Rochester. The suits will retail at $25 for two-piece and $29.50 for three-piece. Botany is laying plans to do more in men's wear field in the coming season.

Samuel Hird & Sons named a price advance on their worsteds Nov. 9.

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Women's Wear Opening in the Offing

Women's wear trade has been slow and most spring lines are being held back for opening this month. Price stability, which has not shown itself in the men's wear market, will be needed to give women's wear a good start. This suggests low levels, as the only attraction a buyer understands at present. Competition is evidently as keen as it has ever been, even before NRA, and mills are apparently neglecting profit to hold their position in the market. Doubtless the coming together of a number of these factors will result in better trade.

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Wool Finance Corp. Formed

The outstanding feature of the wool situation in October was the formation, in Boston, of a Wool Finance Corp., which, operating under Federal auspices, is to take over the unsold wools in Texas and other parts of the country which for weeks had been selling at prices 10c. a clean pound or more below the controlled level for similar wools. Prospects are that the wool market will achieve in the near future a uniform price for wool, and that upon this basis manufacturers and top makers will be able to operate with confidence. As the foreign wool markets throughout October made satisfactory clearances at firm prices, holders of domestic wool were relieved of the menace of possible importations below the domestic level.

Prices on domestic wools for October were nominal on the controlled territory types; fleece wools handled mostly by independents declined slightly while Texas wools moved up closer to the controlled wool price. The greater part of the buying by manufacturers and top makers was of inferior types of original bag wools. Graded wools, relatively high priced, were neglected.

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Rise in Wool Tops Partly Held

The wool top futures market registered the first advance for a number of weeks around mid-October. Foreign markets went up at about the same time. Interest was reported confined to near months. Contracts lost some of the gain before the end of the month, but spots retained it. December was quoted at 77.0 to 78.2 on Sept. 29 and at 80.0 to 81.0 on Oct. 26. Spots in the same interval moved from 82.0 to 85.0.

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Rags Recede as Demand Lets-up

The woolen rag market suffered a reversal of form early in October after remaining strong during the strike period. A feeling of pessimism spread through the market following a let-up in mill demand for rags, and graders have shown willingness to unload at lower prices, which has further unsettled sentiment. Mixed soft woolens, which went over the 10c. mark, slipped back to 9 to 9½c. Light hoods have been quoted at 17½ to 18c. Old serges and old worsteds have been neglected, 7½ to 10c. In the midst of the clothing market's pressure for low-priced fabrics, there is a slight return of sentiment to stabilize quality and wholesale manipulation has been held up.

Wool Textiles May Again Sell "at Value"

The ban against "selling at value" in the code for the wool textile industry has been removed, with approval by the National Industrial Recovery Board of an amendment deleting the provision from the fair trade practice rules. The Board was informed that the restriction was superfluous. The amended section retains provisions against granting options or reservations, or guaranteeing against price changes in commercial transactions. The amendment will become effective unless protests are received by Nov. 12.

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Association Re-elects Webb

Herbert K. Webb, of Charles J. Webb & Sons Co., was re-elected president of the Philadelphia Wool and Textile Association for his seventh consecutive term, at the annual meeting Nov. 2. Joseph S. Lord, of the same company, and Wm. A. Longshore, of I. Reifsnyder & Sons Co., were elected vice-presidents; Frank D. Levering, of Eavenson & Levering, was re-elected secretary for his eighth term, and J. Ellwood Moore, of Wm. G. Allen & Co., treasurer for his 14th term. The principal speaker was Robert L. Studley, president of the National Wool Trade Association and chairman of the Wool Code Authority.

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Activity of Industry

Current statistics on wool consumption and mill activity follow, the activity percentage being based on single 40 hour shift, 5½ days per week:

Wool consumed:	August	September
Total clean equiv. (excluding carpet)	9,417,000	7,967,000
Carpet wool (grease)	7,030,000	5,574,000
Looms (50" wider)..	64.1%	35.6%
Carpet looms	43.5%	38.1%
Combs	46.8%	35.8%
Worsted spindles ..	32.7%	25.8%
Woolen spindles	92.3%	58.1%

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Use of Substitutes a Boon to German Wool Industry

Although feeling the effects of the governmental restrictions on raw material imports, all branches of the German wool industry have been able to continue operations by mixing the raw wool used for yarn production with artificial wool, rayon and other domestic materials, according to a report from Vice-Consul Bernard Heiler, Dresden, made public by the Commerce Department, which is in harmony with reports run in these columns since last July.

By substitution, the spinning mills of the Aachen district have been able to fill most of the orders on hand without further demands on foreign exchange holdings. Worsted yarn spinners of Wurttemberg and the Lower Rhine district were reported to have been fully employed, although they were compelled to make careful dispositions in order to meet the large demands and remain within the limits of the allowed production. In the wool industry of Hof, Bavaria, the receipts of orders for woolen shawls was reported to have been satisfactory.

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Change in Regain of Mixed-Fiber Yarns

Amendment to the rules of practice and merchandising for the sales yarn division of the wool textile industry has been approved, modifying the regain percentages in order to take care of the varying moisture characteristics of certain fibres, effective Oct. 23.

As amended the rule provides for the inclusion of worsted yarns of mixed content—yarns containing silk or rayon, or silk and rayon, either by mix, blend or twist—fixing the moisture regain percentage at 12.

No change is made in the 15% for French spun and 13% for Bradford spun yarns of wool or similar animal fibre.

The percentage for French or Bradford worsted yarns containing cotton either by blend, mix or twist has been reduced from 13% to 11%.

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Woolen Trade Briefs

Government wool stock report as of Sept. 29, issued on Oct. 18, showed total clean equivalent wool held by dealers and mills in the United States to be 186,229,000 lb., of which dealers held 135,974,000 and manufacturers, 50,255,000. A total poundage of 30,165,000 of tops were held and holdings of noils amounted to 11,440,000 lb.

Bids for furnishing type D, white wool blankets, 60x84, to the Navy Dept. were opened Oct. 16. Prices ranged from $3.63 to $5.95 for Item 1A, from $3.63 to $4.80 for Item 1B, $3.63 to $4.75 for Item 1C. Low bidder was Chatham Mfg. Co. The spread shows irregularity in costs, but the fact that low prices are possible may help to ease the retail situation, where it is said an all-wool blanket under $8.50 is rare.

Arthur Besse, president of National Wool Manufacturers Association, issued a statement on Oct. 18 pointing out that the executive order ending the textile strike has been protested by the wool industry in the form in which it was written. Even as written it does not recognize the U.T.W. as representative of the workers, he said, and added, "There is no thought of recognition of the union on the part of the wool textile industry."

WOOL IN THIS ISSUE

	page
D-13 Wool Group Votes for "Typp" System.....	70
Cottons by Wool Methods; All-Cottons and Mixtures	73
The Consumer Wonders How to Judge Wool Fabrics	86
French-Spun Yarn Uneven.....	98
Nubs in Cotton and Wool Goods.....	99
Modified Twisters for Worsted Yarns.....	102

Wool Mill News

C-D-S Products Corp., manufacturers of felt products in Chicago, has purchased a three-story building at 629 Main Street, Anderson, Ind., and will consolidate the Chicago and Muncie, Ind., manufacturing units and its general offices in its new factory. Charles D. Smith is president of the company.

Westbrook (Me.) **Weaving Co.,** shut down since a strike two months ago, will not start again according to S. R. Schulhofer, general manager, but will be vacated. The mill superintendent, S. Z. Veney, has left for another position in Pennsylvania.

Yale (Mich.) **Woolen Mills,** finding it necessary to expand factory space, has petitioned the city council to deed it a street adjoining the main plant as space for an addition. It is planned to install automatic looms now being used in the Marysville, Mich., plant.

Winchester (Va.) **Woolen Co., Inc.,** has been authorized by the State corporation commission to increase its maximum authorized capital stock from $100,000 to $125,000. C. P. McVicar is president.

Botany Consolidated Mills, Passaic, N. J., a Delaware corporation, operating the **Botany Worsted Mills,** are arranging plans for reorganization under the new National Bankruptcy Act. Temporary trustees for the company are F. W. Fort, C. F. H. Johnson, Henry Whitehead, Harry Meyers and Henry Bahenson.

Mayfair Worsted Mill, recently established to do worsted weaving, has leased space in the old Alice mill of U. S. Rubber Co., Woonsocket, R. I. The company is headed by Leo Gottlieb, formerly of Fairmount Worsted Co. and lately resigned from the American Woolen Co. Napoleon Cote, who was formerly with Fairmount, will be superintendent of Mayfair.

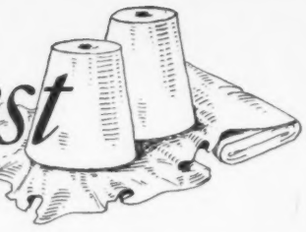
Dominion Woolens & Worsteds, Toronto, reports operating profit of $241,786 for the fiscal year ending June 30, but a net loss of $1,325. Previous year netted a loss of $209,942.

Riverdale Woolen Mills is the name under which the woolen plant at Inglewood, Ont., which has been idle since the summer of 1928, is being re-opened. It is a two-set mill and sufficient twisting machinery is being installed for either hosiery or Axminister carpet yard.

Lannigan's Woolen Mills, Charlottetown, P.E.I., was burned to the ground recently by a fire believed to have started in a picking machine. Loss of four-story building and stock represents a loss of $40,000.

TEXTILE WORLD'S

Rayon Digest



ALTHOUGH we believe the term "rayon" is definitely established in this country, and that there is little cause to worry about its permanence, the adoption of the term "rayonne" by the French textile trade may be hailed as further assurance of that fact. The esteem in which even 100% American women hold things French, is certainly no secret. The appearance of Paris models labeled "rayonne" will lift synthetic fabrics still further out of the basement. On the other hand, if the French had adopted some other new term, its use here would have been regarded as "smart" by many retailers, and confusion might have resulted for a time at least.

As a possibility irrelevant postscript, we quote from a memorandum just received from one of our more flippant, and less reverent, staff-members: Will Russia be next with "rayonski?" —*Editor.*

Knitters Now Star at Rayon Hearings

Interest in the Federal Trade Commission's rayon investigation, which had waned somewhat during the early October sessions in New York, perked up Oct. 23, when the Commission's counsel, Edward L. Smith, began his examination of knitted fabric manufacturers. This testimony, which is expected to be extensive, has been awaited with much speculation as, according to trade reports, it was a complaint from certain knitters which caused the rayon producers to be cited for alleged conspiracy in restraint of trade.

I. Rogosin, president of Beaunit Mills, manufacturers of circular knit fabrics, was the first knitter to testify. After Mr. Rogosin had described his methods of buying yarn, which methods were the standard practice of the trade, he consented, at the Government's request, to open his firm's books to an accountant for purposes of compiling prices paid for yarns. His consent was conditional upon the same procedure being followed with other knitters. He was then excused.

Other features of the hearings during October were: The decision of the Federal Trade Commission at Washington, Oct. 21, overruling Trial Examiner Addison who has charge of the hearings on his contention that Louis A. Wolin could not be cross-examined by respondents' counsel; and the testimony of two representatives of Price Waterhouse & Co., accountants, which firm was cited with the rayon firms. The ruling on examination of Mr. Wolin, who is vice-president of Industrial Rayon Corp., was construed as meaning that a letter he wrote to the trade regarding rayon prices, and referred to in these columns last month, could not be accepted as evidence until the respondents had an opportunity to cross-examine him thereon. The Price Waterhouse witnesses told how that firm had made investigations of sales and price records for yarn producers, and specifically covered the firm's dealings with DuPont Rayon Co.

It was made known Oct. 25 that Arcadia Knitting Mills had agreed, through counsel, to allow inspection of the firm's sales records.

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Metal Nets Highlight Of Bemberg Display

Further evidence of the versatility of cuprammonium yarn was displayed in an exhibition of new fabrics, held by the American Bemberg Corp. at its New York offices, Oct. 26. The showing comprised nearly a score of new constructions, developed by the firm's fabric department, of which W. H. Six is head. Among the more notable numbers were a skein-dyed all-Bemberg plaid taffeta, in two shades of green; numerous bouclés, chiffons and georgettes, and

A sheer plaid featuring gold threads included in Bemberg showing.

an important group of new net fabrics. The nets excited especial interest, as they marked the first commercial effort by Bemberg in this field. They included one lacquered fabric with silver dots and a silk-and-Bemberg metal plaid chiffon. Among the mixtures were a Bemberg-and-acetate georgette for children's and adults' wear and a cotton-and-Bemberg sandy crepe.

Mr. Six stated that the plaid taffeta had already been well received in the trade; it is available in two weights—soft for daytime wear and stiff for evening.

Most of the sheers included in the showing were made of either 50 or 75 denier yarn. Several fabrics of 100 and 150 denier yarn were included.

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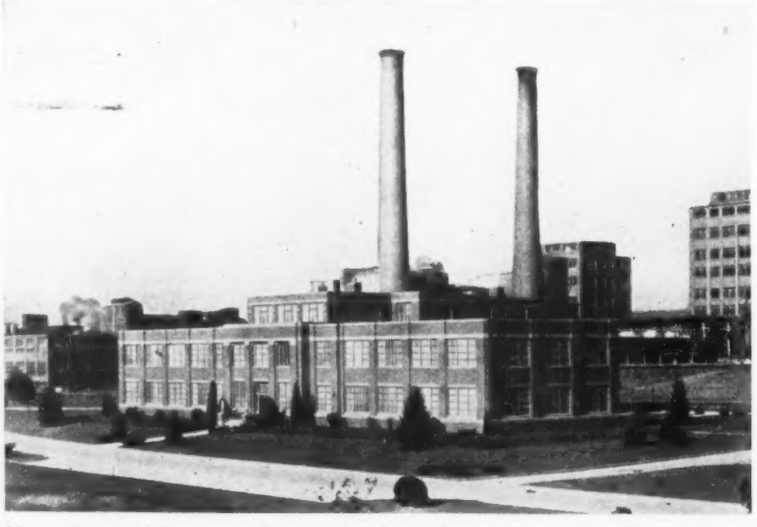
Yarn Market Rallies After Weak Spell

After weeks of decidedly backward buying and a generally soft price condition, the rayon yarn market showed some activity toward the latter part of October. Weavers had run down on their yarn stocks and being encouraged by a fairly good reaction to their new lines, were disposed to place business with producers. The pick-up was most noticeable in the 150/40 bright viscose



New office building recently completed at plant of Tennessee-Eastman Co., Kingsport, Tenn.

and the 100 multifilament viscose, and orders were chiefly for nearby delivery.

During the fore part of the month, the situation was far from satisfactory at the yarn end. Price weakness showed itself repeatedly and there were the usual rumors of an impending reduction. The later improvement served to firm up the yarn division and producers were hopeful that this stronger tone would be maintained.

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It's "Rayonne" in Paris; News Cheers Trade

American rayon yarn merchandisers regard the domestic prestige of the term "rayon" as likely to be greatly strengthened by the decision of the French textile industry to adopt the term "rayonne" as a substitute for "soie artificielle" (artificial silk).

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Rayon Campaign Nears Dotted Line Stage

Developments in the plan for a joint promotional campaign by producers and weavers of rayon were numerous and important during October, and when the month ended more than one yarn company spokesman referred to the project as "definitely settled." While the detailed program remains to be effected and it is likely that this will take some time, one of the major aspects—the perfection of an organization to conduct the drive—is now nearing completion.

Plans include formation of a promotion corporation to operate for three years, and which will have capital stock jointly divided between the members of the National Rayon Weavers Association and a corporation representing the yarn producers. A form of agreement providing for organization of the promotion corporation has been prepared and is being submitted to final revisions. When ready this agreement will be submitted to both groups to be signed. The plan further provides that fabric manufacturers and yarn producers will contribute a quarter of a cent per lb. for every pound of yarn or fabric sold. The plan, it is understood, becomes effective only if producers representing production in excess of 60,000,000 lb. agree, and a similar provision covers participation by consuming mills. It is estimated that the contribution scale will provide $300,000 yearly.

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Sniafiocco

Snia Viscosa, largest Italian rayon manufacturer, is offering a new staple rayon known as Sniafiocco. Although the new fiber is intended primarily for mixing with cotton, one variety is intended to imitate wool. No information released thus far indicates that there is anything unique about the fiber, although it, like the well-known German Vistra, it at present receiving extensive publicity in the general press. It has not been stated what difference, if any, exists between the wool type of Sniafiocco and Sniafil, the wool substitute which Snia Viscosa introduced to this country unsuccessfully in 1925.

RAYON IN THIS ISSUE

	page
Committee D-13 Favors "S-Z Twist"	70
Narrow Fabric Weaves—Types for Designer	74
Rayon Warp Sizing—Aid to Succeeding Processes	76
Loom Thread Separators Reduce Fabric Defects	79
Crispness in French Fabrics Achieved in Novel Ways	87
Shiners in Rayon Fabric	98
Tension on Rayon Warps	99
Ratiné is Streaky	99
Improved Winders	102
Slasher and Humidity Control Instruments	103

Rayon Auto-Train—America has no monopoly on original methods of rayon promotion, as is evident in the news of the "rayon auto-train" which is now having a successful tour in Italy. The train is sponsored by the Italian Rayon syndicate, S. A. Italrayon, as part of a national campaign. The equipment comprises a train of trucks and trailers elaborately labelled "rayon"; all units of the train have windows which show an artistic display of rayon merchandise, including apparel, draperies, etc. The train tours through cities and town; it is installed in the public square and the populace then is invited to view it.

Weavers to Meet

Plans for a general meeting of the membership of the National Rayon Weavers Association, to be held in New York, "not later than the week of Dec. 3," were made known late last month by C. W. Dall, secretary of the association. Mr. Dall said the meeting would consider all major problems now confronting the weavers, but particularly the pending rayon promotional campaign.

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Industry Briefs

Chester C. Bassett, Jr., sales representative in the South for the American Bemberg Corp., will hereafter make his headquarters at the New York office of that company, it is announced. Mr. Bassett will continue to contact Southern mills, operating from New York instead of in the South.

Industrial Rayon Corp.'s financial report for the three months ended Sept. 30, 1934, shows a net profit of $129,181. The showing was regarded as very good in view of market conditions and the recent textile strike. The firm's net for the first nine months of the year totals $1,208,524. Depreciation for the nine months is $493,023.

Decisive increase in rayon shipments is reported by *Textile Organon,* published by the Tubize Chatillon Corp., delivery index figure rising from 300 in September to 375 in October.

Rayon Mill News

J. B. Martin & Co., Norwich, Conn., manufacturers of silks and velvets, will erect a manufacturing plant in St. Johns, Quebec. J. Mum, vice-president of the company, is reported as stating that the plant will employ 40 to 55 men and women.

Booth Mfg. Co., New Bedford, Mass., has arranged for financing in amount of $300,000, through loan from Reconstruction Finance Corp., to be used for operations at mill. Company has recently installed considerable new equipment, including warping, slashing and other machinery, for rayon production.

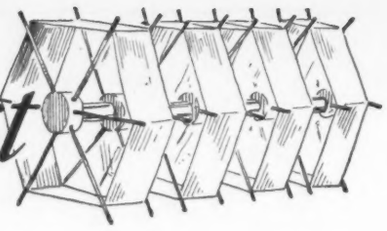
Hathaway Mfg. Co., New Bedford, Mass., has closed down its rayon department indefinitely. The move does not affect its cotton division.

Furness Corp., Gloucester City, N. J., operating under receivership for some months, is arranging for reorganization under new National Bankruptcy Act. Alexander L. Rogers has been appointed temporary trustee in bankruptcy, pending final reorganization program, and co-receivership of Raymond W. Baker and M. L. Praissman has ended.

Associated Textiles of Canada, Ltd., is now making preparations for installation of 150 new silk and rayon looms in its plant in Louiseville, Que. Space made available by the moving of warping, slashing and dyeing equipment and machinery to additions erected in recent months enables the company to increase its loom total to 412.

TEXTILE WORLD'S

Silk Digest



IT is nearly three years now since we first sounded the keynote "Shrink and Sell." Our theme was, and still is, that an individual company must forget past glories and adjust its plant, its personnel, and its policies to current conditions. "No one—not even a stockholder—is interested in the volume of goods produced, and the profits realized, in 1919," we stated in our 1932 Annual Number. "Everyone—and particularly a stockholder—is interested in the profits that can be made in 1932."

Since that time, there have been many thrilling instances where companies have performed major operations of the type we have in mind. It was never a painless operation. Sentiment alone was sufficient to resist the use of an anesthetic. But it had to be done—and the end has always justified the means.

The recent reorganization of Cheney Brothers is another case in point. It is superfluous to refer to the background of that company. Every one who knows the silk industry knows Cheney. Steps have now been taken to "effect a reduction in the production schedule of broad goods, velvet and throwing departments, to bring them within the reduced demand for merchandise now prevailing," to quote from the company's statement. Several members of the Cheney family have retired from active management, even though all members of the family have been identified with the firm for more than 40 years!

That takes courage. But it will bring its own reward, because it is the type of action that keeps old companies healthy parts of a new economy.—*Editor.*

Peace in Paterson Again Threatened

After a few brief weeks of peace in the labor ranks, agitation for a new silk strike caused some apprehension in the fabric industry during October. The situation in the Paterson, N. J., district appeared to be especially uncertain and complicated. Among the chief developments were: Statement by Tax Receiver W. J. Hunziker that he would try to prevent removal of mills from the city, following reports that due to the 1933 and 1934 strikes 1,500 looms had left Paterson and 3,000 more were expected to go; a petition by Paterson officials of the United Textile Workers to F. J. Gorman, national vice-president, urging him to call a national silk strike in support of a current strike in 65 mills there, which petition, however, Mr. Gorman denied; and the calling of a strike Oct. 25 in the dyeing and finishing division which threatened further to impede the broadsilk division.

Tax Receiver Hunziker, on hearing reports that silk firms were leaving Paterson, started an investigation to determine whether these firms have paid taxes on machinery; he said that if they had not, steps would be taken to halt the removal.

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Spinners May Buy Japan Cocoon Surplus

Prospects for strengthening of the cocoon market in Japan, which recently suffered drastic declines, became more promising last month when the spun silk yarn producers made public a proposal calling for the purchase of 10,000,000 kan of cocoons yearly. (A kan is about 8 lb.) The offer was made by the Japan Silk Industry Association, representing the spun yarn group, through the Kogyokai, a major spun silk association, and is now under consideration by the All-Japan Federation of Silk Raisers Associations.

Some leaders in the cocoon industry regard the offer dubiously, due, among other things, to fear that market prices might be pegged at too low a level. However, the offer also has many sponsors, who recognize that the reduction of 10 million kan in the existing cocoon surplus would greatly help in alleviating the present market congestion.

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Rising Silk Market Stimulates Buying

Raw silk continued its progress through October, with the usual momentary setbacks; the trend of the month, however, was consistently upward both in prices and demand. Crack Double Extra 78% 13/15 white, which was available in New York at $1.07½ on Sept. 25, was being picked up quite eagerly at $1.20 on Oct. 25, and the feeling among silk consumers that a continued silk rise was ahead seemed to be gaining.

Weavers bought spiritedly up to January, 1935, in small and good-sized lots, and offered no great resistance to the stronger levels. Improvement in the broadsilk situation, while not great, was sufficient to make for increased confidence as regards commitments for raw silk. Another factor contributing to the better tone is the progress being made in Japan toward enacting its curtailment program. The Japanese industry has made so many false starts in that direction that importers had been skeptical of the current movement, but the belief now is growing that this time the Japanese mean business.

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Prints on Novelty Surfaces Popular

Interest in spring broadsilk lines as manifest by cutters who sampled through the latter part of October, showed a trend toward the new novelty fabric prints. This line, which is one of the 1935 innovations, is viewed as promising well in the better-price ranges. The design is printed on novelty constructions, as against plain constructions, which hitherto have represented the volume end of prints, and the effects achieved both in florals and geometrics have been very satisfactory.

Pure dye crepes have been selling actively in the lower brackets and they seem to be stealing the thunder in that range from the synthetics, according to reports from leading houses.

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T. F. Gurry Chosen Upholsterers Head

Thomas F. Gurry, of Orinoka Mills, New York City, was elected president of the National Upholstery and Drapery Textile Association, at a meeting of the governing board of that body held last month in New York. Other officers chosen were: Vice-president—R. C. Kelley, of John Zimmermann & Sons, Philadelphia; treasurer—Andre Blumenthal, of Sidney Blumenthal & Co., New York; assistant treasurer—C. M. Willon, comptroller of Collins & Aikman Corp., New York; and secretary and general manager—Harvey Willson.

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Silk Industry Briefs

Textile testing laboratories should be licensed to protect both themselves and their customers, Paolino Gerli, president of the International Silk Guild, urged in a message read at the annual dinner of the Association of Textile Laboratories and Technologists, held Nov. 7, in New York. The dinner was in honor of Takeshiga Ishiguro, director of the Japanese Government Raw Silk Intelligence Bureau.

Edmund Wright, secretary of the Textile Converters Association of America, Inc., has resigned as converters' member of the Silk Textile Code Authority, it became known last month.

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For New Klots Firm

A plan for the reorganization of the Klots Throwing Co. under which a new company would be created with an authorized capital stock of 1,335,000 shares of a par value of $1 each, has been submitted to Federal Judge A. L. Watson, at Scranton, Pa., under the provisions of the Adams amendment to the bankruptcy act. The

plan, which was worked out by a committee, provides in detail for the financing of the new company, and stipulates further that the Klots mills at New Bedford, Mass., and at Cumberland and Lonaconing, Md., be sold for $170,000. Judge Watson holds a hearing on the proposal on Nov. 15.

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Fabric Output and Sales Decline

Piece goods fabric production in the broadsilk industry declined 46.1% during the first half of September and then picked up 12.5% during the second half, according to figures compiled by the Planning and Research Bureau of the National Federation of Textiles, Inc. Comparative statistics for the two half-month periods follow:

	Sept. 1-15		Sept. 16-30	
	Total Yardage	% of change since previous period	Total Yardage	% of change since previous period
Production Gross	4,002,000	—46.1	4,463,000	+12.5
Shipments	8,749,000	—28.4	7,427,000	—13.8

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Silk Deliveries 72.2% Above Oct., 1933

Widely-bruited market reports about a decided silk improvement found statistical confirmation in the October, 1934 figures made public Nov. 5 by the Planning and Research Bureau of the National Federation of Textiles, Inc. The Bureau reported that October raw silk deliveries to mills were 50.6% above September and 72.2% above October, 1933, in which month deliveries totaled 28,521. Key statistics in bales follow:

	Imports	Approx. Deliveries	At warehouses (End of Month)
Sept. 1934	50,550	32,599	76,645
Oct. 1934	38,940	49,106	66,479

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Plan New Silk Drive

Preliminary plans for a nation-wide drive to promote Spring, 1935, silk merchandise which campaign would be "more far-reaching than the recent Silk Parade" were announced Nov. 6 by R. D. Jenkins, vice-president of the International Silk Guild, New York.

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More Converters to Go on Code Authority

Plans for reorganization of the Silk Code Authority to give more adequate representation to the converting division, were being developed at the end of October, after intimations by Deputy Administrator Prentiss L. Coonley that the NRA favored such action. Mr. Coonley denied the petition of the Textile Converters Association for a reduction in code assessment, but characterized as "meritorious" the assertion that the converters' representation on the Code Authority was inadequate and should be increased.

In dismissing the plea for lower assessments the Deputy Administrator held that "the facts do not warrant assessing converters on a different basis than others in the industry." The request was opposed by the Silk Code Authority through Peter Van Horn, chairman, who submitted several counter-requests including one asking that the converters' rate of assessment in the Authority budget be increased 15%.

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Outlaw Bribery, Aim of Code Clause

A provision which would define and outlaw commercial bribery was included in a group of proposed amendments to the silk textile code which came before Acting Deputy Administrator A. Henry Thurston at a hearing in Washington, Nov. 7. Other proposed amendments defined the term "ribbon manufacturer," establish regulations for written agency agreements relating to shipment of goods on consignment, and authorize woven label manufacturers to enter into agreements for liquidation of damages.

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Silk Mill News

Mabson Silk Co., Holyoke, Mass., plans to move its weaving department to the company's main plant at Middletown, Conn., according to I. Gerber, superintendent.

Sidney Blumenthal & Co. reports a net loss of $173,649 for the quarter ended Sept. 30, against a net profit of $386,751 for the same quarter last year. Nine months shows loss of $521,734, against profit of $54,849 in 1933 period.

Feldlink Silk Co., Paterson, N. J., is concluding arrangements for lease of space in former plant of Rockland Finishing Co., Garnerville, near West Haverstraw, N. Y., and proposes to establish a new mill at that location, removing present plant and increasing capacity. Four labor organizations have been seeking to enjoin its removal during the life of a contract said to be in force with its employees.

Madison Weaving Co., Paterson, N. J., recently organized with capital of 100 shares of stock, no par value, plans operation of local silk mill. Incorporators of new company include Gerrard Berman and A. W. Mussman, Paterson. Abram I. Bluestein, 126 Market St., Paterson, is company representative.

Joseph R. Morton & Co., Inc., Graham, N. C., recently organized by Joseph R. Morton, Greensboro, N. C., and L. C. Allen, Burlington, N. C., to operate a silk throwing mill, have awarded general contract to C. M. Guest & Sons, Anderson, S. C., for new mill near town limits of Graham, where large tract of land has been acquired. Plant will be two-story and basement, 60x228 ft., with one-story boiler house. It will be equipped for production of hosiery tram, with initial capacity of about 10,000 lbs. weekly, employing 125 operatives. It is estimated to cost $200,000, with machinery. Entire initial output will be used by the May Hosiery Mills, Inc., and McEwen Knitting Co., Inc., both of Burlington, which are closely identified with new project.

Cumberland Valley Silk Mills, Chambersburg, Pa., has leased the plant formerly operated by Armion Textile Corp., a subsidiary of Haas Bros. Fabric Co. The company will operate on a commission weaving basis.

Teson Silk Co., formerly of Paterson, N. J., has completed work of removing its machinery and equipment from that city to Danville, Pa., where plant of Gritman Throwing Co. has been leased. J. G. Wolfe, president, said the firm will soon purchase 10 additional looms.

Tilt Silk Mills, Pottsville, Pa., employing more than 800 workers when in full operation, has given notice to employees of indefinite suspension of operations.

Fairy Silk Mills, Shillington, Pa. Receiver Earl S. Jenckes has been authorized to borrow $35,000 to continue this business, the same to be a prior lien on the property.

Acton Vale Silk Mills Ltd., Actonville, Que., is now equipped with modern throwing plant including nine Monarch spinners with necessary re-drawing frames. New Universal quillers have replaced old type machines and at present all looms in the mill are being overhauled. P. P. Demers, president of the company, states that new looms may be added before long.

Corono Velvets, Ltd., a new firm, has established a plant in Drummondville, Que., for the manufacture of high grade dress velvets. Building operations are nearly completed and the installation of 50 looms is under way. President of the company is J. M. Montplaiser, of Drummondville, and the sales director is John Cowling, president of Louis Roessel & Co., Ltd., Montreal. A. M. Durand, who has held positions with various velvet manufacturing firms in the United States and France, has been named mill superintendent.

Riverside Silk Mills, Galt, Ont., have awarded general contract to G. H. Thomas & Son, 45 Dickson St., for new one and three-story addition, 35x85 ft., to cost over $30,000, with equipment. J. Evans, 30 Water St., city, is architect.

SILK IN THIS ISSUE

	page
Committee D-13 Favors "S-Z Twist"	70
Narrow Fabric Weaves—Survey of Types	74
Loom Thread Separators Reduce Fabric Defects	79
Crispness in French Fabrics Achieved in Novel Ways	87
Bar Marks in Silk Crepe	98
Glazing Silk Thread	98
Improved Winders	102

TEXTILE WORLD'S

Knit Goods Digest

IF there are still any doubts as to the inherent unfairness in the use of "flying squadrons" during a strike, the experience of the underwear industry in the recent war should dispel those doubts. Although this branch was not included in any of the numerous orders issued by the U. T. W., a questionnaire conducted by the Underwear Institute reveals that 10% of the 75% who replied were forced to close down by the squadron raids. Apparently any textile plant was fair game. During such emotional outbursts, it could not have been otherwise.

It is bad enough for a plant in an industry where a strike has been called, to be forced to close even though the workers of that plant want to stay on the job. It is still worse when such closure is forced upon a company in a non-combatant industry.

The Underwear Institute is to be commended for having supplied this further proof of the lawlessness of squadron activities. The evidence is now 100% conclusive.—*Editor.*

Ringless Dispute Slows Hosiery Sales

With the possible exception of the three-carrier division, where the prospects of patent suits tend to impede sales, the hosiery outlook at the end of October was promising. Ringless lines continued in active call, comparatively speaking, but both manufacturers and distributors agreed that the situation would be better if it were not for the threatening litigation between the "ins" and the "outs" over the license agreement drafted by the Textile Patents Corp. It had been generally expected that fall would be a banner period for ringless, due to the fact that the new process of manufacture gives its best results on dark-colored hosiery, and while no one lacks confidence as to the future of the line, present sales are less than had been looked for.

Seamless hosiery is in fair demand, and the same holds true for the medium-priced range of half-hose. Representative Worth Street factors estimated that fall volume would be about as good as the same season last year. Little distress merchandise has been in evidence of late, and prices therefore are somewhat firmer than hitherto.

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Authority Data Shows Hosiery Improvement

A decline in hosiery stocks in mills which was greater than any month since March was reported for August by the Hosiery Code Authority in its statistical bulletin published Oct. 18. End-August inventories totaled 17,318,822 doz. pr., the lowest since the March low of 17,053,423 doz. pr. While the August stock decrease was largely seasonal, and due to the normal jump in shipments, which totaled 8,765,694 doz. pr. for August, the Code Authority pointed out that it indicated a "general improvement in market strength." Production figures, by dozens follow: August, 1934, 7,731,343; July, 1934, 6,442,889.

The report includes as a new feature, a "table of turnover" which shows a turnover of six times for the year ended Aug. 31.

Hosiery statistics, in dozens, announced by the Bureau of the Census of the Department of Commerce for August, and which differ markedly from those of the Code Authority, due doubtless to variation in the total of mills reporting, follow:

	Total Output	Net Shipment	End-of-Month Stocks
August 1934	5,278,477	6,184,719	11,603,914
July 1934	4,469,587	4,390,069	12,236,470

•

Hosiery Meeting Nov. 19-20

Production control will be among the major problems of the hosiery industry which will be discussed at a two-day conference to be held Nov. 19-20 in New York, it was announced Oct. 17 by Earl Constantine, executive director of the Hosiery Code Authority. The conference will be attended by all the branch advisory committees of the industry.

•

That Ringless War

Prospects of litigation to determine the validity of the patent on three-carrier hosiery were considerably strengthened in late October when it was reported in New York that ringless hosiery manufacturers who are not included in the pool represented by the Textile Patents Corp. had decided definitely against signing the licenses offered by that corporation. This decision, it was understood, was reached at a meeting of the outside group, at which time the manufacturers took the position that the patent was invalid.

Yes, There Was No Underwear Strike!

The scope of the late but not lamented textile strike was wider, unofficially, than the trade generally has realized, as is indicated in reports from the Underwear Institute. These reports show that the underwear industry, which was not officially involved in the United Textile Workers walk-out order, found operations impeded in various mill districts by the activity of the so-called "flying squadron." Approximately 10% of 75% of the member mills of the Institute were forced to close for some period due to intimidation, according to returns made to a questionnaire sent out by the Institute. These mills employed a total of 10,171 persons; however, the percentage of this total who were actually forced to quit work in this non-strike warfare is not available, the Institute states.

Commenting on the 'flying squadron's" activity, the *Institute News,* official organ of the Underwear Institute, points out out that answers to the questionnaire did not cite any instance of a voluntary walk-out by underwear workers.

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Underwear Call Light

Movement of underwear lines was quiet following the October openings, and the lack of response had a weakening effect on the price structure in certain divisions. The weakness was especially notable at the low-price end, where competition between individual retailers and chain distributors has resulted in downward pressure on mills. The picture is not all dark, however. While wholesalers report a trend toward demand for merchandise in lower brackets, the prices of lightweight ribbed merchandise seem to be holding their own; in many instances these levels are the same as at the end of the spring season.

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Test New Returns Plan for Outerwear

Hope for a satisfactory solution of the returns controversy which has caused much dissatisfaction between sellers and buyers in the outerwear industry now focuses on the plan for the central returns bureau soon to be established in San Francisco. This bureau which has been approved by the Code Authority as a valuable laboratory test, will function as follows: Returns of outerwear merchandise will be sent to this bureau by Coast retailers, and will be examined and judged on merit of claim, by an impartial tribunal composed of one representative of Pacific Coast outerwear manufacturers and one representative of Coast retailers. Expediency and elimination of lengthy correspondence is viewed as the chief advantage of the Bureau; it is understood that if the test proves successful, the plan will be applied on a nation-wide scale by the National Knitted Outerwear Association.

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New Outerwear Boards

Approval of the memberships and plans of procedure of trade practice complaints committees for the knitted outerwear in-

dustry was announced by the National Recovery Administration, Oct. 16. The approved organization plan creates a central compliance board and six regional boards. The personnel of the central compliance board follows: August Egerer, chairman, Knitted Outerwear Code Authority, and president, National Knitted Outerwear Association; Harold R. Lhowe, New York, executive director of the Code Authority; Sidney S. Korzenik, New York, N. Y., secretary of the Knitted Outerwear Code Authority; John W. Power, New York, Administration member of the Code Authority; Al. Greenhill, Brooklyn, N. Y., president of Greenhill & Daniel, Inc., and director of the National Knitted Outerwear Association; Adolph J. Farber, treasurer, Friedman-Blau-Farber, Cleveland, Ohio, and director of the National Knitted Outerwear Association.

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Good Swimsuit Outlook

Bathing-suit prospects for the 1935 season were declared by New York market leaders at the end of October to be "quite encouraging". Lines opened to the wholesale trade on Nov. 5, which was the date announced by Herman Heller, of New York, chairman of the committee appointed at a recent meeting of swim suit manufacturers. Prices were 5 to 10% below last year, due to reductions in prices in the yarn market.

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Chattanooga Hosiery Mills Reopen

Strike difficulties, which continued in certain hosiery centers for some time after the termination of the general textile strike, were gradually being adjusted during October and at the end of the month, conditions were viewed by the National Association of Hosiery Manufacturers as very nearly normal. The *News-Letter,* official organ of the association, pointed out that in Chattanooga, Tenn., which was the only important area where shutdowns continued after the general strike ended, all but one of the remaining mills had reached agreements with the local union. Representatives of the union and of the manufacturers reached an accord providing for: recognition of seniority, no discrimination against strikers or union workers, and recognition of collective bargaining.

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Higher Homework Rates Proposed

Various safeguards for workers in the homework division of the knitted outerwear industry were proposed at a hearing held at Washington last month before Assistant Deputy Administrator M. D. Vincent. A committee representing the manufacturers submitted a list of regulations and changes including the following: A homework control committee would be created to administer the regulations; all firms engaged in the homework industry would be registered; workers would be prohibited from taking employment in factories while also engaged on homework; and a complete new scale of compensation rates would be adopted, all payment to be in check or cash.

KNIT GOODS IN THIS ISSUE

	page
Yarn Pretreatment for Unshrinkable Knit Goods	78
Release of Kinks from F. F. Sinkers	82
British Accept Anti-Run Hosiery	88
Avoiding Pitted Needles	96
Faulty Knot Tying	98
Streak in Knitted Fabric	99
Wrap-Stripe Attachment	102

Industry Briefs

James Talcott, Inc., New York, has been appointed factor for Jeanette Hosiery Mills, Inc., Elkins Park, Pa.; and Sherer Knitting Mills, Inc., Boston, Mass.

Patent Validity—The U. S. Supreme Court has sustained the validity of the patent granted Roy E. Tilles, vice-president, Gotham Silk Hosiery Mills, which patent makes possible the production of hosiery with adjustable length. The patent was contested by the Artcraft Silk Hosiery Mills, Inc.

That Rubber Bathing Suit—Questioned regarding the effect of rubber bathing-suits on textile swimsuit sales, manufacturers in this industry have depreciated the likelihood of any serious threat; it was stated that at the most rubber swimsuits did not represent more than 5% of the business.

P. H. Hanes Knitting Co.'s 1934-35 advertising campaign is awaited by underwear manufacturers with interest. It will be the biggest ever undertaken by this firm, and will include 678 newspapers and seven farm papers and small town magazines and the distribution of 101 million Hanes sales messages.

American Hosiery Abroad—American hosiery is winning popularity among discriminating Frenchwomen, according to Mrs. Frank Jay Gould, who arrived in New York Oct. 16 on the *Ile de France,* for the express purpose, she said, of "buying your beautiful American stockings about which I have heard so much from Frenchwomen."

Compilation of a list of trade marks and brands in the underwear industry has been started by the Underwear Institute, Washington, D. C. All underwear mills are requested to advise the Institute of current lists and subsequent changes, in order that the directory of brand names and trade marks may be complete.

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Knitting Mill News

Union Hosiery Mfg. Co., affiliated with the LeMar Hosiery Mills and the Marle Silk Co., Paterson, N. J., has been organized to carry on the business of the Union Hosiery Co., New York.

Foremost Hosiery Co.'s former plant at Clifton, N. J., has been taken over by a company formed by Samuel Kahn recently resigned as vice-president of the Propper-McCallum Hosiery Co. Other assets were sold at auction on Oct. 19.

Miller Mfg. Co., Ballston Spa, N. Y., has moved to Amsterdam where production of knitted outerwear will be continued in the old Gardiner & Warring plant.

Paulmar Knitwear Mills, Inc., Brooklyn, N. Y., have been organized with capital of $20,000 to manufacture knit goods. Company will take over and succeed to organization of same name, with local mill at 221 Powell St.

Noon & Haines Knitting Mill has been organized in Buffalo, N. Y., by James Noon, William Haines and associates to establish and operate a textile mill at 522 Broadway.

Garnerville (N. Y.) **Sportwear Co.,** recently organized, has leased portion of former local plant of Rockland Finishing Co., totaling about 20,000 sq.ft. floor space, and will equip and occupy.

Dunitz & Co., Inc., Garnerville, N. Y., recently organized to manufacture knit goods, has leased space in former local plant of Rockland Finishing Co., totaling about 15,000 sq.ft. floor area, and will equip at early date for new knitting mill.

Perry (N. Y.) **Knitting Co.** has ceased operations at its Mt. Morris, N. Y., branch plant, established 20 years ago. Machinery is being removed to Perry where it is being installed in the firm's main plant. The Mt. Morris unit will be demolished.

Fay Hosiery Mills, Inc., Elyria, Ohio, have recently been organized by officials of **Fay Stocking Co.,** with local mill, to manufacture hosiery.

Charles Hathaway, Miner Building, Eugene, Ore., is at head of a project to construct and operate a local knitting mill. Plans are under way for new one-story plant, 60x120 ft., estimated to cost $25,000, with equipment. Graham B. Smith, Register-Guardian Building, Eugene, is architect.

Booth Knitting Mills Co., Philadelphia, Pa., has been organized by Ernest and Kenneth E. Booth to establish and operate a plant at East Hagert and Emerald Sts., that city.

Coane Knitting Mills Co., Philadelphia, Pa., has been organized by Samuel Coane and associates. Headquarters have been established at 1005 Filbert St.

O.V.B. Knitting Mills, Inc., Spring City, Tenn., has been formed to operate a plant on men's socks and women's circular-knit hosiery and anklets. The **Morgan Mills,** Rome, Ga., has been taken over by this new organization and equipment may be moved to Spring City.

Quality Hosiery Mfg. Co., a new hosiery mill, has been organized at Murfreesboro, Tenn. Officers are: Oliver N. Norris, president; Floyd Norris and T. A. Moore, vice-presidents; G. A. Maxwell, secretary-treasurer.

TEXTILE WORLD'S

Processing Digest

FOR six weeks last year the silk and rayon dyeing and printing industry in Paterson, N. J., and vicinity was virtually at a standstill because of a strike. As this issue goes to press another strike is again paralyzing this division of the processing industry.

We do not propose to discuss here the merits of the union's demands or the refusal of the employers to grant them in this particular instance. It is more important that we interpret the handwriting on the wall. One of the largest finishing companies in the Paterson area is reported to be making plans to move its plant to Allentown, Pa. Close observers of the situation believe that this step will be only the first in a general migration of the larger dyeing companies to other sections of the country, where operation of their plants will not be continually affected by strikes and threats of strikes.

Geographically, the silk and rayon dyeing industry is now centered in an almost ideal location. Other factors, however, can outweigh this one advantage. At present profits in the industry are the exception. Frequent interruption of production because of strife between employers and employees does not help matters. If forced to it, the plant owner can move his equipment to centers where labor problems are less acute. And he will do it unless more amicable ways are found to settle the disagreements between employers and employees.

However good or bad the plight of the silk dyehouse workers may be today, it will be a thousand times worse if they compel the industry to make an exodus to other localities and change the Paterson area into a region of deserted mills and empty buildings.—*Editor.*

Silk Dyers Strike

Frequent conferences between employers and union officials have, as we go to press for this issue, failed to break the deadlock in the strike of silk and rayon dyers which began at midnight Oct. 24. Employers have taken a firm stand against the closed shop issue, and workers thus far have refused to agree to a 6-mos. extension of the contract which expired last month. Important events connected with the strike are given below in chronological order.

Oct. 24, 1933—Institute of Dyers & Printers, Independent Dyers & Printers Assn., and Local 1733 of the United Textile Workers of America effect 1-yr. agreement providing for minimum wages of $23 a week for male employees, $16 a week for female employees, maximum work week of 40 hr., and recognition of unions affiliated with American Federation of Labor.

Aug. 24, 1934—Union officials seek revision of contract at its expiration, asking for 30-hr. week, 20% increase in wages, and closed shop with employers agreeing to employ only members in good standing of the American Federation of Silk Workers.

Sept. 11—Union demands immediate adoption of 30-hr. week and threatens strike if demands are not met.

Sept. 12—Employers reject union demands, and file injunction against union.

Sept. 13—Vice-chancellor Chas. Egan grants temporary injunction against five locals of United Textile Workers, restraining them from calling or discussing a strike or in any way interfering with present contracts; 20,000 workers served with copy of restraining order.

Sept. 24—Threatened strike of silk and rayon dyers scheduled for today averted temporarily by ending of general strike and order of U.T.W. for its members to return to work.

Oct. 10—Conference between union officials and employer representatives comes to abrupt end with conferees unable to agree.

Oct. 20—Dye workers at mass meeting plan to call strike at midnight, Oct. 24, if employers refuse closed-shop demand.

Oct. 21—National Textile Relations Board intervenes in effort to prevent strike.

Oct. 22—Strike order issued. Employers vote to open plants as usual.

Oct. 25—Strike in Paterson area estimated to be nearly 100% effective, with 20,000 workers out and strike spreading to other sections of New Jersey and to New York. Many plants picketed.

Oct. 26—Agreement on open-shop controversy reached at conference in Washington of employers, employees, and Textile Labor Relations Board; provides 36-hr. week at same pay as has prevailed for 40-hr. week.

Oct. 27—Union's settlement board rejects agreement; conference in Paterson of union officials and employers ends in deadlock.

Oct. 29—Union votes to extend strike to western New Jersey, Pennsylvania, and New England, calling out 10,000 employees in addition to 25,000 now out.

Oct. 30—Union leaders prepare to close cotton finishing plants in northern New Jersey. William Willheim Co., Inc., reported as planning to move its plant from Passaic, N. J., to Allentown, Pa., to escape, as one executive put it, "the chronic labor threats peculiar to Bergen County."

Nov. 4—Second conference in Washington adjourns with no agreement reached.

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Pre-Shrunk Cotton Linings

A new type of Sanforized lining which, it is stated, will remain firm through repeated launderings and will not shrink when washed, has been placed on the market by Kendall Co. The new lining is offered in sheetings and print cloths, in white and colors. In its announcement, the company expresses the belief that the new lining solves for retailers and consumers one of the serious problems of the summer wash-clothing business and paves the way for an exceptionally good demand for this type of garment in 1935.

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Goodall Working With Laundries

Plans for increased cooperative effort between the Goodall Worsted Co. and the laundry industry toward improving the launderability of Palm Beach fabrics are now being formulated by Ernest W. Hewett, research engineer for the Palm Beach fabrics manufacturers, it was made known Oct. 22. Mr. Hewett's program which calls for extensive research and experimentation, was developed from suggestions made by delegates to the recent convention of the Laundryowners National Association, in Cincinnati. In line with its plan for increased attention to the laundering aspect, the Goodall company is enlarging its physical testing laboratory at Sanford, Me. Effort also is being made to obtain fullest cooperation of retailers in the movement.

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Association Notes

Albert L. Scott, president of Lockwood Greene Engineers, Inc., has tendered his resignation as president of the National Association of Finishers of Textile Fabrics, to take effect before Jan. 1 at the convenience of the executive committee. Mr. Scott, who was elected head of the finishers' association on May 26, 1933, has recently been made president of Rockefeller Center.

Plans for the annual convention of the American Association of Textile Chemists & Colorists, to be held in New York, Dec. 7 and 8, were discussed at a meeting of the New York section, on Oct. 26. Henry F. Hermann has been appointed chairman of the arrangements committee; Carl Z. Draves, chairman of the technical program committee; A. J. Royce, chairman of the entertainment committee. At this sectional meeting Dr. Jerome Alexander spoke on "The Nature of the Combination Between Dye and Fiber."

Dr. Wallace H. Coxe, ballistic engineer, E. I. duPont de Nemours & Co., presented a paper on "Descriptive Ballistics," at the meeting of the Philadelphia section of the A.A.T.C.C., held Oct. 26.

Addresses by Dr. Joseph L. Costa, of the Woonsocket Rayon Co., on "Artificial Fibers," and by James Gilet, of the Gilet Carbonizing Co., on "Carbonizing of Wool," featured the meeting of the Rhode Island section, A.A.T.C.C., held Oct. 26, in Providence, R. I.

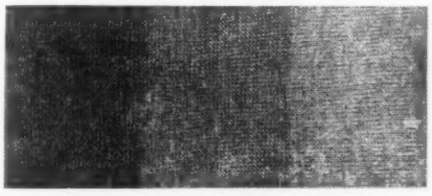
The annual meeting of the Carolina section, A.A.T.C.C., was held Nov. 10, in Charlotte, N. C.

Louis Lazare, president of Duplex Silk Mills, has been elected president of the Textile Converters Association of America, Inc., succeeding Edmund Wright, who continues as secretary. Walter Ross, of J. Rosenholz, Inc., was elected chairman of the board.

Controls Dye Affinity of Mercerized Yarns

A new process for treating mercerized yarns to control dye affinity is announced by Ewing-Thomas Corp., Chester, Pa. The process is said to control the basic structure of the yarn, and thus for the first time to make available to the knitting trades mercerized yarns with heightened or retarded affinity for dyes. The new yarn is known as Metro-Shade, which means "combining of shades." The process is the result of experiment and research to perfect the union dyeing of cuprammonium yarn, which has a high affinity for dyes, and mercerized yarns. It is an outgrowth of the increasing use of cuprammonium in seamless and full-fashioned hosiery.

While dye manufacturers have worked closely with synthetic-yarn producers to perfect dyes with which satisfactory union shades could be achieved, and have succeeded to some extent in overcoming the difficulties, they were definitely limited by conditions which neither yarn producer nor dye manufacturer could overcome. For this reason solution to the problem was sought through control of the inherent structure of mercerized yarns. This structure, it is stated by Henry A. Stafford, technician and superintendent of Ewing-Thomas Corp., has a direct relation to the depth of shade obtained by dyeing. The new process tends to increase the strength of the yarn, according to Mr. Stafford, while the uniform



A piece-dye, showing the three shades. No. 1 Dark on left and No. 2 Light on right

knitting and dyeing qualities of Metro-Shade yarns are identical with the regular New Finish mercerized yarns.

Metro-Shade No. 1 Dark is processed to give greater affinity for dyes than the standard New Finish yarns, and is particularly suitable where mercerized yarn is combined with cuprammonium. Metro-Shade No. 2 Light is designed to meet the need for a yarn with retarded dye affinity, often required to effect a better union with viscose yarns when used in combination with mercerized yarn. Metro-Shade No. 1 Dark is tinted fugitive pink and No. 2 Light is tinted a fugitive blue to distinguish the two yarns and prevent confusion in their use.

The manufacturers believe that the new yarns will find application, not only in women's stockings and in certain types of children's hosiery and men's half hose, but also in all fabric fields wherever another yarn is used with mercerized cotton and a good union is an important consideration. It is interesting to note also that multiple-shade effects may be obtained through various combinations of New Finish and Metro-Shade yarns.

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Conference on Shrinkage

A proposed standard specification for the shrinkage of woven cotton fabrics will be reported early in November to a conference of textile trade and technical associations, it was announced, Oct. 23, by the American Standards Association. The specification provides methods for determining shrinkage and requires that the maximum amount of shrinkage shall be stamped on or firmly attached to the fabric. To cover the cases of special fabrics, where different amounts of shrinkage in warp or filling are necessary, provision is made for separately designating these facts.

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Evans Succeeds Haskell On Silk Dye Authority

John F. Evans was elected chairman of the Code Authority for the Rayon & Silk Dyeing & Printing Industry, Oct. 22, following the resignation of General Wm. N. Haskell, who had held the post since last January. Mr. Evans, who has been counsel to the Code Authority, is a member of the law firm of Evans, Smith & Evans; he indicated that he would continue his law practice in addition to his new duties.

Other important changes in the silk dyeing and printing industry were the election of Peter Van Vlaanderen, president of the Van Vlaanderen Machine Co., of Paterson, N. J., as president of the Institute of Dyers & Printers, to succeed G. H. Conze, vice-president of the Susquehanna Silk Mills, who resigned his Institute post.

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NRA Jottings

The plant extension sub-committee for the finishing branch of the cotton textile industry has been empowered to pass on applications for the additional productive machinery in that branch, according to a National Industrial Recovery Board ruling, announced Oct. 13.

The Textile Processing Code Authority appointed a committee last month to investigate and recommend standards of quality, nomenclature, etc. The committee, subject to acceptances, comprises: Arnott R. Broom, Horace T. Greenwood, Louis Malina, J. W. Schulze, and H. C. Wolfenden.

The Joint Industrial Relations Board of the Textile Print Roller Engraving Industry has submitted a proposed scale of minimum wages for journeymen, apprentices, and learners, as follows: No learner to be paid less than $14 weekly for the first year, $16 weekly the second year, $20 the third year, $24 the fourth year, $28 the fifth year, $32 the sixth year, and $38 the seventh year. The plan also specifies a $50 weekly, or $1.25 hourly, minimum wage for die cutters, machine engravers, clampers, etchers, stipplers, hand engravers, plate cutters, pantograph overseers, sketchmakers, and rollermen; and a $1 hourly wage for setters.

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Processing Plant News

Blue Bird Dyeing Co., and **La Salle Printing & Dyeing Co.,** Haledon, N. J., affiliated organizations, both in receivership, are arranging for early reorganization under new National Bankruptcy Act. Charles Goodman and Fred A. Salkowitz are receivers.

Blue Ridge Dyeing & Finishing Co., Inc., Paterson, N.J., recently organized with capital of $125,000, plans operation of new print and dye plant. Incorporators of new company include Theodore Pier and Merwin C. Van Winkle, both of Paterson. James A. Wiley, 745 River St., is company representative.

Fashion Piece Dye Works, Inc., Paterson, N. J., has been organized with capital of $25,000, by Irving I. Rubin and R. H. Reiffin, 152 Market St., Paterson, to operate a local finishing plant.

Art Dye Works, Inc., Brooklyn, N. Y., have leased group of three buildings at former plant of the Rockland Finishing Co., Garnerville, near West Haverstraw, N. Y., now operated as an industrial terminal by the Garnerville Holding Co., and will remodel and equip for a new dye and finishing works. Floor space approximates 50,000 sq.ft., all of which will be used for new plant. It is understood that present mill will be removed to new location.

Ideal Textile Processing Co., Inc., New York, N. Y., has been organized with capital of $20,000, by Raymond and Abraham Megibow, 501 Palisade Ave., West New York, N. J., to operate a dye and finishing mill in the metropolitan district. John Burnick, 654 Fourth Ave., Brooklyn, N. Y., is interested in company.

Textile Converting Co. has been organized in Philadelphia, Pa., to establish and operate a plant at 254 South 3rd St. Principals of the firm are Robert Modell, 818 South 60th St., and Max Swartz, 2138 North Wanamaker St.

Rhode Island Processing Co., Coventry, R. I., has been placed in the hands of A. C. Gillespie and W. H. Suttenfield as receivers. The former is treasurer of the company.

PROCESSING IN THIS ISSUE

	page
Dyehouse Fog Can Be Eliminated at Low Cost	68
Yarn Pretreatment for Unshrinkable Knit Goods	78
Pyroxylin Coated Fabrics—Nitrocellulose Solution	80
A Better Scour	96
A Way to Center Cloth on Starching Range	96
Useful Drying Frame	97
Cloth Carrier Rolls	97
Glazing Silk Thread	98
Moisture-Content Control System	102
Finishers' Uniform Cost Manual	104

TEXTILE WORLD'S

Engineering Digest

RECOGNITION of the fact that about twice as many workers are killed in accidents outside the plant gates as in factory operation, has led to an "After the Whistle Blows" campaign as an outgrowth of the fifth annual Greater New York Safety Conference. About 100 industrial plants will cooperate, with the following subjects treated: automobile hazards, child and home safety, home hazards, first aid, recreational hazards. Activities will take the form of letters to employees, group meetings of employees and their families, a home bulletin-board contest and safety competition between plant teams.

Anyone who is familiar with the benefits derived from safety education *within* plants will cheer this initial six-months' campaign and hope that the idea will spread.—*Editor.*

Driving Two Looms With One Motor

Development of a double loom drive by E. A. Earnhardt of Clifton Mfg. Co., Clifton, S. C., is described in *Industrial News*, published by the Gates Rubber Co. A double-end motor is used and the drive is through V-belts. The two looms will seldom pick together and the load on the motor will be more uniform and lower when compared with individual motors. Among the other points cited as advantages are the following:

1. Looms can be set 4 in. closer together than when individual drives are used.
2. Better over-all efficiency because the average load on the motor will be nearer the best efficiency point of that motor.
3. Less time required for maintenance.
4. Speed of loom can be changed by merely changing the diameter of the motor sheaves.
5. Improvement in the power factor decreases the copper loss in the electrical feeders to the looms.

Although the double drive was used to replace individual loom motors at Clifton, Mr. Earnhardt points out that the scheme can also be used to replace other types of drives.

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Chemical Treatment of Finishing-Plant Wastes

Recommendations for the chemical treatment of trade wastes to prevent pollution of rivers and harbors are made by Dr. Foster D. Snell, consulting chemist, Brooklyn, N. Y., in a report to the division of water, sewage, and sanitation chemistry, of the American Chemical Society. Among the methods described by Dr. Snell is that followed in a small finishing plant which does piece-dyeing and printing on cotton, rayon, silk, silk-and-cotton, and silk-and-wool. This plant carries out a number of operations besides the dyeing itself, including a boil-off treatment, bleaching, and mercerizing. It has a mixed discharge consisting of 100,000 gal. per day of exhausted dye solutions and wash water; 200,000 gal. per day of waste from the boil-off and bleach department; and 10 to 20 gal. per day of very concentrated waste, along with 500 gal. per day of wash water, from the printing department.

The wastes from the boil-off and from the print shop are so concentrated that they are diverted before they are mixed with the other wastes and run into the sewer. The sewer in that particular locality is built to handle a small percentage of trade waste from the plants in the vicinity. The rest of the wastes are made to combine in such proportions that they will neutralize each other as far as possible. This combined discharge is then made to enter a large basin from which it can be allowed to flow into the settling basin at a uniform rate. On its way from the averaging basin to the settling basin there are mixed into it 4 lb. of hydrated ferrous sulphate and 4 lb. of lime to 1,000 gal. The settling basin has a capacity of 200,000 gal. Overflow from this goes over a weir and is then suitable for discharge into the nearby stream. This is a continuous process, coagulation taking place all the time in the settling basin, and the sludge that forms on the bottom being removed at intervals. In this particular plant the sludge can be disposed of in the sewer system. The cost of the chemicals required in this treatment totals $13.80 a day; that is, 4.6c. per 1,000 gal. of waste.

Dr. Snell pointed out that the trade-waste problems in other plants are not always as simple as the one just described. The waste liquors from a wool washing plant, for instance, present a more complicated problem.

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Second Cousin of Lastex

U. S. Rubber Co. has brought out Laytex, an electrical insulating material said to possess a number of advantages over other types of insulation. As is the case with Lastex, Laytex is derived from latex, the milk of the rubber tree. To apply the insulation, a conductor is run through a series of baths containing Laytex. In each bath a film of insulation is formed and converted from liquid to solid before the conductor comes in contact with any support.

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Wins Safety Contest

Friedman-Blau-Farber Co., knit goods manufacturers of Cleveland, won the annual safety contest in that city, in which about 700 firms participated. The company did not have a single accident in the last six months of the contest, and has had no "lost time" accidents in the last four years.

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Instruction on Inventing

The new Inventors Foundation, Chanin Bldg., New York, announces that it has instituted courses for inventors at New York University, Stevens Institute of Technology, International Correspondence Schools, and Blackstone Institute. Subjects include technic, patent law, and commercial development.

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What Price Broken Lug Straps?

An investigation to determine how much it costs a mill each time a lug strap breaks has been conducted by J. E. Sirrine & Co., engineers, Greenville, S. C., for the E. H. Jacobs Mfg. Co., Danielson, Conn. A questionnaire was sent out to 136 mills in various sections and some of the questions and summaries of replies are given below. J. E. Sirrine & Co. point out, however, that there are so many variables that the answers have a wide range and, due to the fact that most mills have no records, must be considered largely as opinions and not as facts.

Question 1. Would a broken lug strap be likely to cause breakage in any loom parts?

Answer. The majority of replies said that there is a *possibility* of breaking one or several parts. Many, however, stated that no damage is done when the protector rod and frogs are in proper order and the loom in good mechanical condition.

Question 2. What percentage of broken

Here's a 1,500-lb. self-aligning roller-bearing made by SKF. It's a bit large for a spindle bearing; in fact, it would take a big mill to live up to it.

lug straps causes a break-out or shuttle smash?

Answer. Fair average of all replies was 3½% on coarse and medium goods, and 16½% on fine goods and box work—much depending on condition and type of loom.

Question 3. How many minutes is the loom out of production, including any subsequent adjustments?

Answer. Average of replies was 15 min. on coarse goods and 39 min. on fine goods.

Question 4. When a loom bangs off, is the sudden shock to the loom harmful to its weakest parts?

Answer. With two exceptions each mill replied that it is harmful and dreaded.

Question 5. How much does a broken lug strap cost a mill, exclusive of the cost of the new strap?

Answer. Average about 35c. for coarse-goods mills and 96c. for fine-goods mills.

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Power Show Next Month

Practical power cost saving equipment, and exhibits to demonstrate each new mechanical development in action, are features of this year's Power Show. The Exposition will take place at Grand Central Palace, Dec. 3 to 8. Exhibitors are putting the finishing touches on their presentations, many of which are in tune with the wave of plant rehabilitation.

Allied to air conditioning and refrigerating equipment, will be a complete display of industrial fans and blowers; also devices for vacuum cleaning of industrial equipment. Other matters to be featured include refractory and insulation materials, protective coatings, steel and various alloys, central-heating and power plant equipment, industrial filters, materials handling equipment, etc.

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Save This for Winter

Keeping sprinkler heads from freezing is not a problem this time of the year, but the Muskegon, Mich., plant of Brunswick-Balke-Collender Co. has just let the news slip out of a kink which it utilized last winter. The company has a number of sprinkler valves located in unheated sections of the building. The first method devised to keep the valves from freezing was to build inclosures around them and to place several 100-watt lamps inside. This heating arrangement accomplished the desired results, but the cost of lamp replacements was excessive.

The answer to the problem was the substitution of small, 300-watt strip heaters, mounted on the wall of each inclosure. At a cost of a few cents a day the sprinkler valves are now protected by a clean and safe source of heat.

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Don't Despair if A Tank Collapses

Occasionally tanks or other cylindrical vessels, made of a malleable metal such as copper, collapse. They are "sucked in" owing to the creation of a vacuum. A regulating valve may have failed or an operator may have neglected to take proper precautions.

Very often these tanks can be restored easily and rendered as useful as ever, even though the collapse has been so great that the top of the tank touches the bottom.

To restore the collapse quickly and effectively merely requires the utilization of water pressure to re-expand it. Very likely a single-stage centrifugal pump will not give sufficiently high pressure for the purpose, but a multi-stage centrifugal pump may do the trick. Better still, use an ordinary steam or reciprocating pump. Pump water into the collapsed tank and it will gradually assume its original shape. If the tank is riveted, some caulking is usually necessary; or, if the leaks are unusually bad, they may be welded. The tank may be reinforced, if necessary, to prevent similar collapse in the future.

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Engineering Trade News

Westinghouse Electric Supply Co. has appointed Bonnell W. Clark as vice-president and general manager. H. N. Gansman and R. J. Holterman have also been appointed vice-presidents.

Timken Roller Bearing Co., Canton, Ohio, was awarded first place by the judges for the most effectively conceived and executed industrial advertising campaign of the year in the Tool and Equipment Division of the National Industrial Advertisers Association at the annual convention recently held in Cincinnati.

Crane Co., Chicago, has elected P. R. Mork vice-president in charge of sales.

John C. Hutto, district representative, Stewart Iron Works Co. (industrial fences), Cincinnati, Ohio, has added southwest Virginia to his territory, and has moved his residence from Charlotte to Greensboro, N. C.

Combustion Engineering Co., Inc., New York, has divided the Southern territory into two districts. The Southeastern district will extend from Richmond to Florida, with headquarters at Charlotte, N. C. This district will be in charge of T. C. Heyward as district manager. The Southwestern district will extend south of the Kentucky-Tennessee border and west of Atlanta to the Mississippi River. It will be under the Chattanooga District Office with L. C. Haller as district manager.

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Engineering Mill News

Bigelow-Sanford Carpet Co., Thompsonville, Conn., has engaged Hungerford & Terry, Inc., Clayton, N. J., to design and build for them a 5,000,000 gallon-per-day Hungerford filtration plant of air-water-wash type. The work is under way and the new plant should be in operation about Jan. 1, 1935.

Clark Thread Co. of Ga., Austell, Ga., has built a 60x100 ft. community building.

Gainesville (Ga.) **Cotton Mills** have given Link-Belt the contract for 194 silent chain drives for spinning frames complete with Tex-Til type oil-leak-proof casings.

Summerdale Dyeing & Finishing Works, Inc., Philadelphia, Pa., has filed plans for new one-story building at Mill St. and Holmesburg Ave., to be used primarily for storage and distributing service. General contract recently was awarded to Leslie E. Bender, 1137 Wakeling St.

Washington Mills Co., Fries, Va., has just installed a new heating system.

Clifton (S. C.) **Mfg. Co.** is making extensions and improvements in power plant used for service at Nos. 1 and 2 mills, and **Converse Mills,** including installation of new equipment. It is proposed to complete program at early date.

Ware Shoals (S. C.) **Mfg. Co.** has announced plans for the construction of 250 dwellings in the mill village.

Riverside Silk Mills, Ltd., Galt, Ont., will erect an addition to its plant at an estimated cost of $20,000.

ENGINEERING IN THIS ISSUE

	page
Dyehouse Fog Can Be Eliminated at Low Cost	68
Coal or Oil—Which Is the Correct Fuel	84
Regain Control	102
Sedimentation Equipment for Water Service	103
Felt Protected Ball Bearings	103
Synthetic Product for Thread Guides	103
Portable Blower	103
Vibration-Absorbing Material	103
Arc Welder	104
Cutting Machine	104
Improved Values	104
Rubber Belt Dressing	104

QUOTATIONS

At close of business, November 1, 1934

Prices cover average qualities unless otherwise stated

Cotton Goods

	Nov. 1	Oct. 1	1933 Nov. 1
PRINT CLOTHS			
27-in., 64x60, 7.60	4¾	5	4½
38½-in., 64x60, 5.35	6¾	7½	6½
39-in., 68x72, 4.75	7⅜	8	7⅛
39-in., 72x76, 4.25	8⅛	8¾	8⅛
39-in., 80x80, 4.00	8¼	9	9
BROWN SHEETINGS			
36-in., 56x60, 4.00	7⅞	8½	7⅛
36-in., 48x48, 5.00	6	6¼	5⅛
37-in., 48x48, 4.00	7½	8⅛	7⅛
MISCELLANEOUS			
Drills, 37-in., 3 yd.	9¾	10½	9¼
Denims, 2.20	15	15½	15½
Tickings, 8 oz.	19	19	20
Standard prints	7½	7½	7¾

Cotton Waste

Peeler comber	14.00
Peeler strip	13.25
White spooler (single)	7.00
Linters (Mill Run Average)	5.50

Cotton Prices

Spot Cotton at:	Nov. 1	Oct. 1	For Month High	For Month Low	1933 Nov. 1
New York	12.25	12.50	12.65	12.35	9.75
New Orleans	12.34	12.60	12.75	12.48	9.45
Liverpool	6.83	6.91	6.98	6.83	5.48

FLUCTUATIONS OF FUTURES

	Closed Nov. 1	For Month High	For Month Low	Closed Oct. 1	Net Change
Nov	11.95	12.36	12.08	12.25	—0.30
Dec	12.00	12.43	12.14	12.30	—0.30
Jan	12.03	12.49	12.17	12.35	—0.32
Feb	12.06	12.53	12.20	12.36	—0.30
March	12.09	12.57	12.25	12.43	—0.34
April	12.09	12.58	12.30	12.46	—0.37
May	12.09	12.60	12.35	12.50	—0.41
June	12.06	12.62	12.37	12.53	—0.46
July	12.03	12.64	12.39	12.56	—0.53

AVERAGE PRICE JUNE-JULY SHIPMENT HARD WESTERN COTTON

	F.o.b. New England Middling	St. Middling
1⅛-in	14.80	15.30
1 7/16-in	16.05	17.30
1¼-in	18.80	20.80

Based on Dec., 12.00.

FOREIGN COTTONS

Alexandria Exchange, Nov. 1	
November, Sak	14.87
December Uppers	12.58
Shipment c.i.f. Boston (Tariff not included)	
Medium Sak	25.10
Medium Uppers	23.10
(By Anderson, Clayton & Co.)	
India Rough, Calcutta Camilla	9.00
China Tientsin No. 1	11.12½

Quotations on cotton cloth and cotton yarn as given on this page include the cotton processing tax. Cotton waste prices also include the processing tax but of course the prices on various raw cottons do not include it.

Cotton Yarn (Nominal)

(Tax Added)

CARDED (Average Quality)

Double Carded 2c—4c., higher according to quality

SINGLE SKEINS OF TUBES (Warp Twist)

4s to 8s	$0.27	20s	$0.30
10s	.27½	24s	.32
12s	.28	26s	.33
16s	.29	30s	.35

TWO-PLY SKEINS AND TUBES

8s-2	$0.27½	20s-2	$0.30½
10s-2	.28	24s-2	.32½
14s-2	.29	30s-2	.35½
16s-2	.29½	40s-2	.41½

SINGLE WARPS

10s	$0.28	20s	$0.30½
14s	.29	24s	.32½
16s	.29½	30s	.35½

TWO-PLY WARPS

8s-2	$0.28½	20s-2	$0.31
10s-2	.29	24s-2	.33
14s-2	.30	30s-2	.36
16s-2	.30½	40s-2 ordin.	.42

HOSIERY CONES (Frame Spun)

8s	$ .27	18s	$ .29½
10s	.27½	20s	.30
12s	.28	22s	.30½
14s	.28½	24s	.31½
16s	.29	26s	.32½

COMBED PEELER (Average Quality)

TWO-PLY—(Knitting Twist) Cones

20s-2	$0.37½	50s-2	$0.51
30s-2	.41½	60s-2	.56½
40s-2	.46	80s-2	.75½

WARPS, SKEINS AND CONES

TWO-PLY—(Warp Twist)

20s-2	$0.38½	50s-2	$0.52
30s-2	.42½	60s-2	.57
36s-2	.45	70s-2	.67
40s-2	.47	80s-2	.77

SINGLES

14s	$0.36	38s	$0.46
20s	.37½	40s	.47
28s	.41½	50s	.52
30s	.42½	60s	.57

MERCERIZED CONES—(Combed, Ungassed)

30s-2	$0.52	60s-2	$0.70
40s-2	.57	80s-2	.96

Raw Silk

Prices Nominal

	13/15 White	20/22 White	20/22 Yellow
Special Grand, 85%	$1.45	$1.16	$1.09
Grand XX, 83%	1.32	1.15	1.08
Special Crack, 81%	1.26	1.13	1.06
Crack XX, 78%	1.21	1.11	1.04
Extra, Extra, 73%	1.19	1.09	1.02
Best Extra, 68%	1.17	.....	.....

RAW SILK EXCHANGE

	Nov. 1	Oct. 1	For Month High	For Month Low	Net Change
Nov	1.15	1.12	1.15½	1.11	+0.03
Dec	1.16	1.13	1.15½	1.11½	+0.03
Jan	1.16½	1.13½	1.16½	1.13	+0.03
Feb	1.16½	1.14	1.17	1.13½	+0.01½
March	1.17	1.15½	1.17	1.13½	+0.01½
April	1.18	1.15	1.17	1.14	+0.03
May	1.18	1.15½	1.17	1.14½	+0.02½

Silk Yarns

Hosiery tram 5thd. Japan, 85%	$2.20
Hosiery tram, 5thd crack XX, 78%	1.95
60/2 spun silk	2.95

RAYON WASTE

Thread (for garnetting)	12.00

Wool

OHIO, PENNSYLVANIA, ETC. (GREASE)

Fine delne	$0.27 –$0.28	⅜ blood	$0.29 –$0.30
Fine clthg	.22 – .23	¼ blood	.28 – .29
½ blood	.28 – .29		

TEXAS AND CALIFORNIA (CLEAN)

Texas, 12 months	$0.71–$0.73
California, Northern	.61– .62

MONTANA, IDAHO, WYOMING (CLEAN)

Staple fine	$0.75 –$0.77
Staple ½ bld	.72 – .75
Fine and fine medium (original bag)	.71 – .73
¾ blood	.65 – .66
½ blood	.58 – .60

EASTERN SCOURED PULLINGS

A.A	$0.71 –$0.73	B-Super	$0.50 –$0.55
A-Super	.60 – .62	C-Super	.48 – .50

CARPET WOOL (Nominal)

Aleppo (clean)	$0.18 –$9.21
Sining	.11 – .15
China filling (clean)	.10 – .14

Tops and Noils

TOPS—BOSTON

Fine (64-66s)	$0.95 –$0.98
Half-blood (60-62s)	.88 – .93
Aver. ¾ blood (56s)	.80 – .81
½ blood (50s)	.73 – .75

NEW YORK TOP FUTURES

	Closed Nov. 1	For Month High	For Month Low	Closed Oct. 1
Nov	77.2	80.2	75.6	75.6
Dec	78.0	80.5	76.8	76.8
Jan	78.2	80.6	76.0	76.0
Feb	78.4	80.8	76.2	76.2
March	79.0	81.0	76.4	76.4

TOPS—BRADFORD ENG. (Nov. 1)

Fine (64s)	26½d	¾ bld. (56s)	19½d
½ bld. (60s)	24½d	¼ bld. (50s)	15 d

NOILS—BOSTON

Fine	$0.51 –$0.53	¾ bld	$0.44 –$0.46
Half bld	.48 – .50	¼ bld	.40 – .43

Worsted Yarns

ENGLISH SYSTEM WEAVING

2-20s 44s	$0.97½–$1.00	2-36s 58s	$1.32½–$1.35
2-30s 46s	1.05 – 1.10	2-40s 60s	1.37½– 1.40
2-30s mixes	1.40 – 1.45	2-50s 64s	1.52½– 1.55

ENGLISH SYSTEM KNITTING

2-20s 44s	$0.92½–$0.95	2-20s 60s	$1.17½–$1.20
2-20s 50s	.97½– 1.00	2-20s 64s	1.22½– 1.25

FRENCH SYSTEM

1-26s 64s	$1.20 –$1.25	2-40s 64s Zephyrs	$1.42½–$1.45
1-30s 64s warp	1.40 – 1.45	2-50s 66s	1.60 – 1.65

Domestic Rayon (Skeins)

VISCOSE PROCESS

Denier	Filament	Price	Denier	Filament	Price
50	14	$1.15	150	24–40	$0.55
75	30	.90	150	60	.60
100	40	.75	300	44	.45
125	36	.62			

NITRO-CELLULOSE PROCESS

Denier	First Qual.	Denier	First Qual.
75	$0.95 –$1.00	150	$0.60
100	.80 – .85	175	.60

ACETATE PROCESS

Denier	Price	Denier	Price
45	$1.20	100	$0.85 –$0.90
55–65	1.15	120	.70 – .80
75	1.00	150	.65 – .75

CUPRAMMONIUM PROCESS (TWISTED)

Denier	Filament	Price	Denier	Filament	Price
30	24	$1.50	100	75	$0.80–$0.90
75	60	.95–$1.05	150	112	.65– .75

Five Years Ago

We Opened Our New

Warehouse at Spartanburg

With the Atlanta Office and Supply Depot this Doubled our Supply Service to the Southern Mills

The Experience of Five Years has Proved this Additional Service amply justified – We Appreciate the Splendid Way in which our Southern Friends have responded to our efforts to give them Better and Quicker Service – especially on Parts for Repairs

We can now Make Practically Immediate Shipment on all regular Supply parts for the Loom to both Northern and Southern Mills

Most Mills now Understand the Economy – from the standpoints of Efficiency of Operation and Life of the Loom – of Using Only Draper Parts for Draper Looms

DRAPER CORPORATION

Hopedale Massachusetts

Southern Offices Atlanta Ga and Spartanburg S C

Riegel
PEPPERELL
TRADE MARK
FABRICS
Apple Fabrics
ERLANGER MILLS
Goodrich Safety Silvertowns
BORDEN
FABRICS
REG. U. S. PAT. OFF.
CANNON
GOODYEAR
SEAL OF
CONE
FABRICS
SERVICE
GOODYEAR
They know the value of
SPINNA CALF
They are among America's leading textile producers. . . . among the many whose fine spinning and excellent fabrics bear testimony to the wisdom of their choice of Spinna Calf for roll coverings.
A. C. LAWRENCE
LEATHER COMPANY
Specialists in Textile Leathers
Boston, Mass.
Peabody, Mass.
Greenville, S. C.
A. C. LAWRENCE LEATHER CO.
SPINNA
CALF
BOSTON
U. S. A.

A name synonymous with PROGRESS in QUALITY PRODUCTS

Nearly three years ago we published an advertisement using this same heading — at a time when we could sum up so many evidences of accomplishment that to us then, it seemed as if the ultimate had been achieved in research, manufacturing, efficiency, and quality of product.

But the habits and momentum of more than 30 years of research and development have carried on. Experiments commenced in 1930 bore fruit in 1934. Notably the Single Head Thread Spool — the perfect package for industrial thread.

Closely following came the new Satin Finish for cones and tubes —an improvement on the famous Velvet Surface for the packaging of finest count rayon and silk yarns.

Constant effort developed remarkable improvements in the Sonoco Cork Cot — the Sonoco Pull-on Machine and the Buffing Machine.

Certain basic improvements in construction of cones and tubes brought us closer to perfection in quality all through our line of paper carriers.

1935 will bring more and greater progress in all lines of endeavor. SONOCO may be depended upon to keep pace with the leaders.

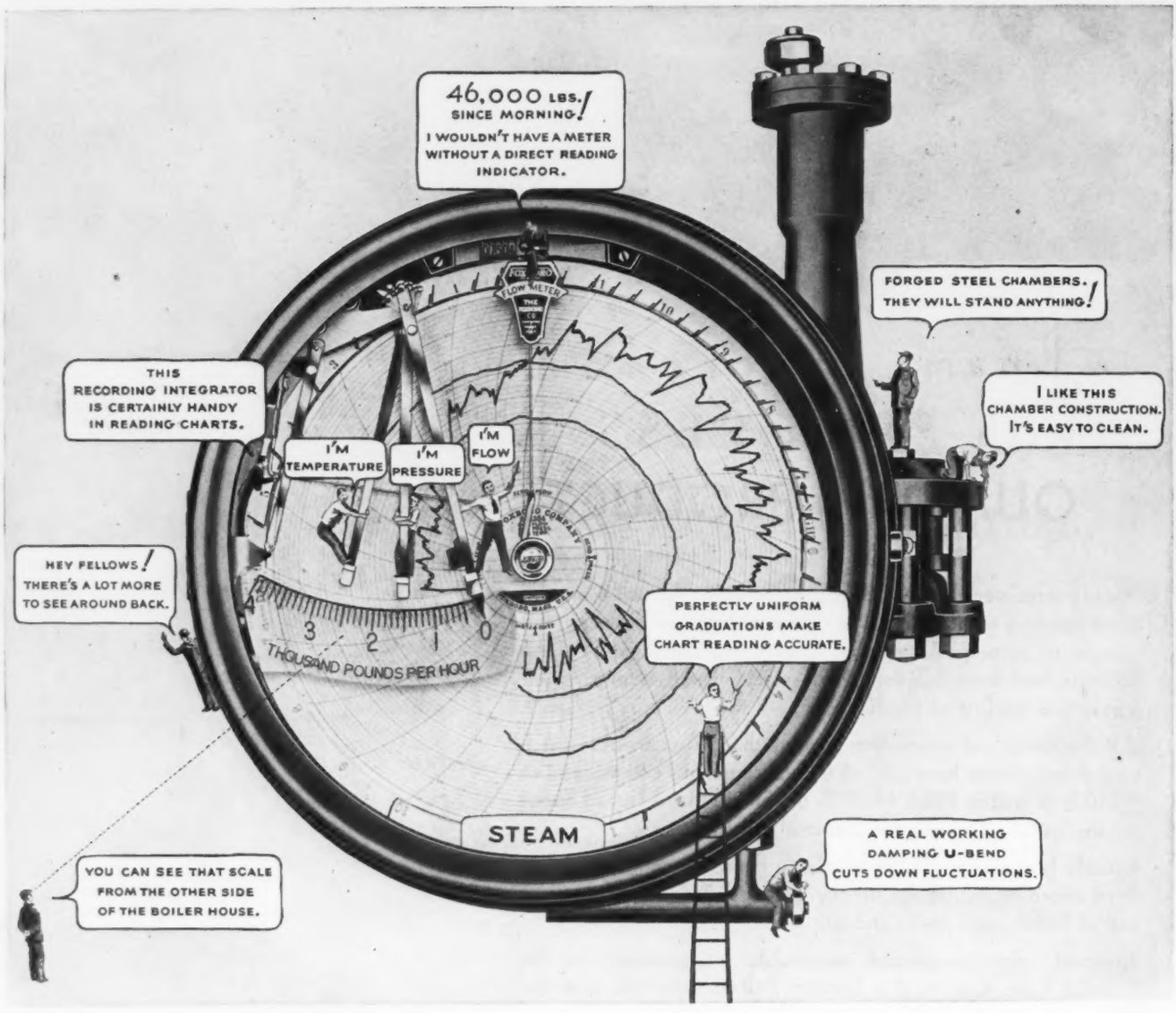
SONOCO PRODUCTS COMPANY

Main Plant and General Offices:
HARTSVILLE, SOUTH CAROLINA

Branch Plants:
Rockingham, N. C.
Garwood, N. J.
Brantford, Ont.

Eastern Sales Office:
North Avenue,
Garwood, N. J.

THIS NEW METER FITS EVERY TEXTILE MILL CONDITION


46,000 LBS.! SINCE MORNING. I WOULDN'T HAVE A METER WITHOUT A DIRECT READING INDICATOR.
FORGED STEEL CHAMBERS. THEY WILL STAND ANYTHING!
I LIKE THIS CHAMBER CONSTRUCTION. IT'S EASY TO CLEAN.
THIS RECORDING INTEGRATOR IS CERTAINLY HANDY IN READING CHARTS.
I'M TEMPERATURE
I'M PRESSURE
I'M FLOW
HEY FELLOWS! THERE'S A LOT MORE TO SEE AROUND BACK.
PERFECTLY UNIFORM GRADUATIONS MAKE CHART READING ACCURATE.
3 2 1 0
THOUSAND POUNDS PER HOUR
STEAM
A REAL WORKING DAMPING U-BEND CUTS DOWN FLUCTUATIONS.
YOU CAN SEE THAT SCALE FROM THE OTHER SIDE OF THE BOILER HOUSE.

Here is a truly universal meter that will measure the flow of any fluid under any condition.

You can have a simple Recording Meter, or if conditions require, you may have

1. Pressure Compensation
2. Direct Reading Integrator
3. Recording Integrator
4. Pressure Recording Pen
5. Temperature Recording Pen

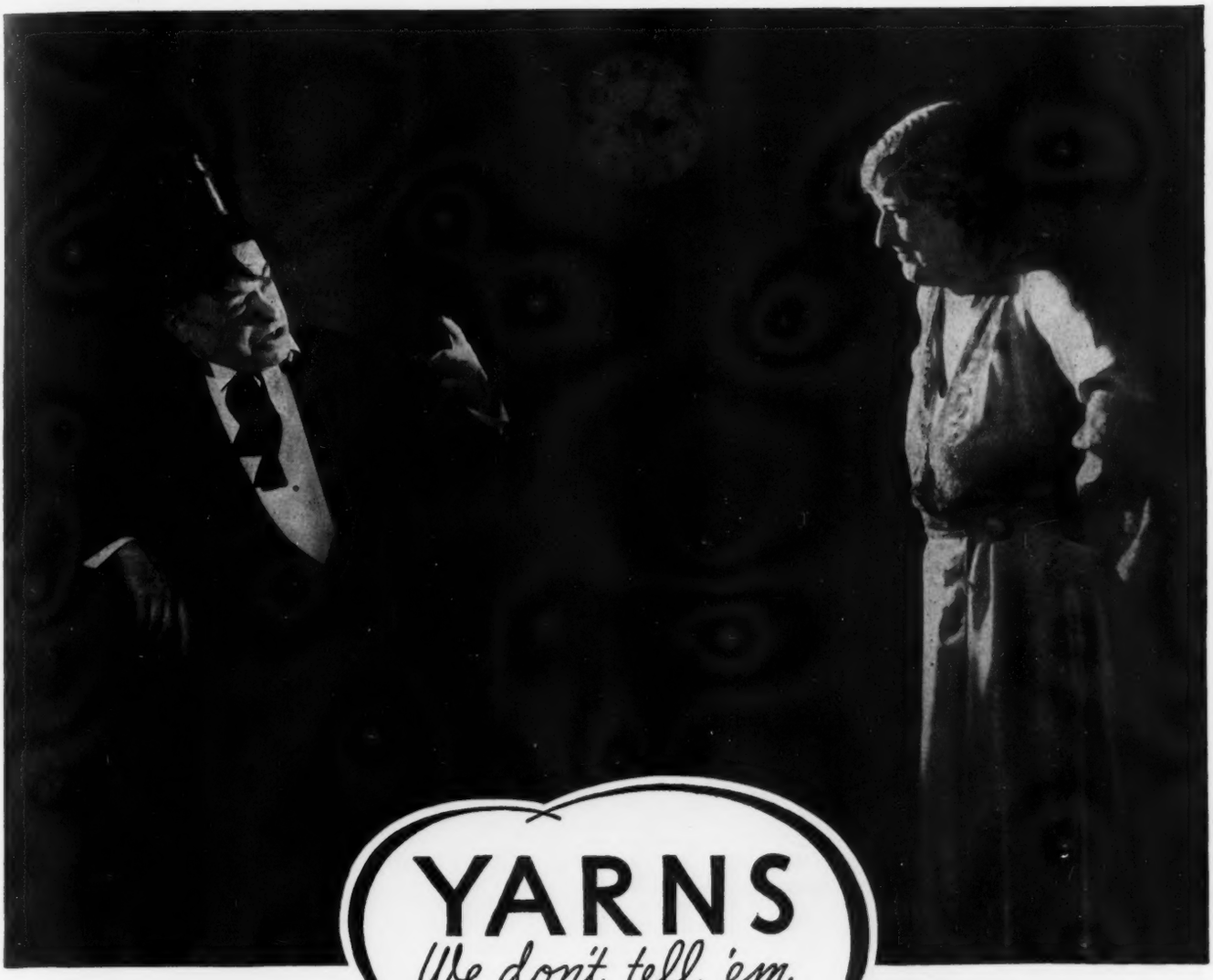
Of course this meter meets every power plant requirement! It is also the perfect meter for steam distribution, water, gas and mill village water systems. It will pay you to get the complete story on the Foxboro Universal Meter. Write today—no obligation.

FOXBORO
REG. U. S. PAT. OFF.
THE COMPASS OF INDUSTRY

THE FOXBORO COMPANY, FOXBORO, MASS., U.S.A.

Atlanta Office—161 Spring Street Building **Branch Offices in Principal Cities**

• • COMPLETE TEXTILE MILL INSTRUMENTATION • •



KEEP OUT OF TROUBLE WITH F. P. YARNS

Some yarns are used just to GET out of trouble

Franklin Process cotton yarns are good for that purpose, too, but they are even better as a means of *avoiding* trouble altogether. These yarns, always dependable, are made by reputable spinners who pride themselves on standardization of quality in manufacturing methods and in raw materials. It is a simple matter to duplicate results that you obtain with Franklin Process yarns. • Franklin Process offerings include all popular counts and qualities — natural, bleached or dyed — in almost any standard put-up. Many numbers are carried in stock in Providence and Philadelphia. • If you are not sure as to the most suitable yarn for your requirements, we shall be glad to make recommendations on the strength of our past experience with a great variety of yarn users. Samples and prices on request.

FRANKLIN PROCESS COMPANY

Yarn Merchants and Yarn Dyers. Also M'f'rs of Glazed Yarns and Machines for Dyeing and Bleaching Yarns in the Package Form, Cotton and Wool Raw Stock, Worsted Tops and Worsted Yarn on Jackspools, also Machines for Soaking Silk. Main Office and Plant at Providence, R. I. Branch Plants at Philadelphia, Greenville, S. C., and Chattanooga, Tenn. New York Office, 40 Worth St.

FRANKLIN PROCESS

COTTON YARNS AND CUSTOM YARN DYEING

"Gentlemen, your preventable power wastes may cost enough to pay your preferred dividend."

"MOST plants, gentlemen," said the man with the Red Book—"can cut their power costs at least twenty per cent, some as high as fifty per cent. Throughout industry, you can figure power costs at from four to ten per cent of total manufacturing costs. I am quoting a leading authority* when I say that therefore '. . . *manufacturing costs can be cut from one to five per cent . . . (and) the savings will in many cases exceed the entire net profit of the business.*' "

Who is the man with the Red Book? He may be a power engineer, a consultant, or a member of one of our Power Transmission Clubs.

He will tell you to forget about what you pay for power at the meter. It's in the spread between the meter and the machines where power costs are wasted and hidden profits lie. These losses can be controlled. They show up in the cost of power *delivered to the production machines* and that depends on the methods used to transmit power to the machines.

He will ask you to compare the investment cost per installed horsepower of small individual motors for Unit Drives and large motors for Group Drives—and to consider the carrying charges which must be added to your power bills (see graphs at right of which there are many more in the Red Book, sent upon request).

* Power

WORK—IS A SOURCE OF PROFIT IN MANY PLANTS . . .

He will agree with you that Unit Drive with small high-cost motors is necessary for many machines and departments regardless of higher investment, maintenance and power costs. But he will point out that, where conditions permit grouping of machines with each *grouped production unit* powered by a larger, more efficient motor, Modern Group Drive not only offers definite advantages but important savings in first cost, maintenance cost and power costs. Although case studies prove this, he will ask for an opportunity to study your production requirements before submitting a planned recommendation.

Do not wait for this man to call—send for him. Ask us for a Roster of the Power Transmission Club membership. In the meantime, why not get a copy of the Red Book which is "a practical analysis of some fundamentals of Industrial Power Transmission." Write for it today.

POWER TRANSMISSION COUNCIL

(*Sponsored by Mechanical Power Engineering Associates*)

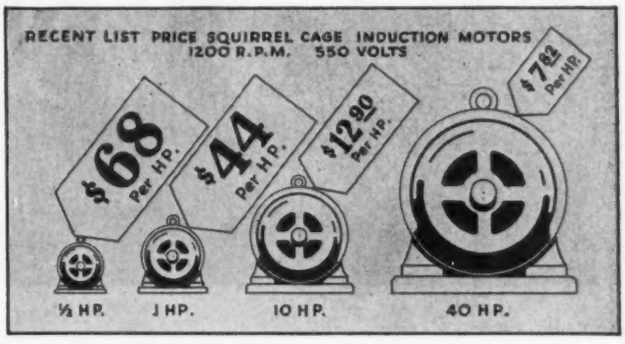
An association of producers and distributors of power, power units and mechanical equipment for the transmission of power.

370 LEXINGTON AVENUE, NEW YORK

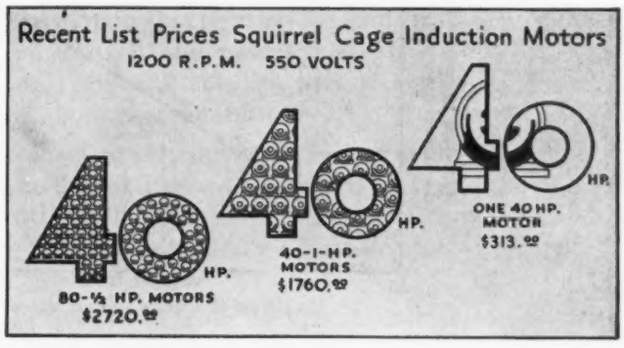
•

The group photograph in this advertisement is a scene from a sound-film demonstration of Modern Group Drive as an economic principle in power transmission. Duplicates with projection facilities are available at all of our 54 Power Transmission Clubs. Ask to have it shown in your plant.

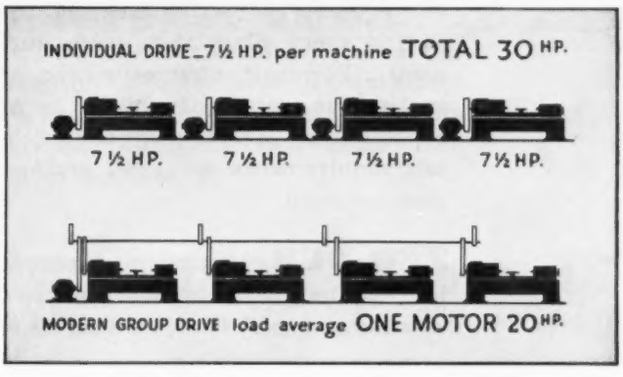
For example, consider the price of horsepower.



Then consider how the use of small motors affects your total horsepower investment.



Now see how much horsepower you actually need for a 20-horsepower job.

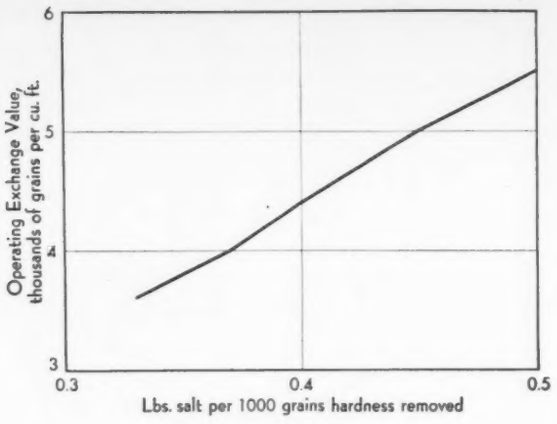


Case studies have been made in a number of plants showing detailed costs of group drives, or combinations of group and unit drives, compared with the cost of a unit drive on each machine. These case studies, available on request, report the actual findings of power transmission engineers working with the manufacturers' own plant officials, engineers and accountants.

A POWER DOLLAR SAVED IS A PROFIT DOLLAR EARNED

SUPER

A NEW AND

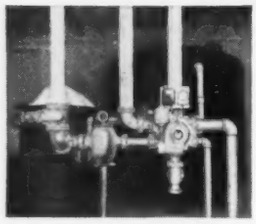


● This is an important announcement to every owner of water treating equipment, and to every plant that needs such equipment. Permutit now offers an improved zeolite for water softeners . . . of higher capacity, of greater ruggedness, of lower salt requirements per 1,000 grains of hardness removed.

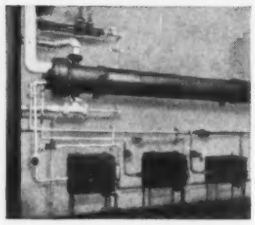
ZEO-DUR, Permutit's greensand zeolite, has long been known for its resistance to wear and tear. Now, by a series of special treatments, it is made more rugged than ever before, and at the same time its water softening power is increased. We call this new zeolite SUPER-ZEO-DUR. The maximum capacity of SUPER-ZEO-DUR is 75% greater than that of regular greensand zeolite. Or to put it another way, even if operated at sharply reduced salt requirements, Super-Zeo-Dur is substantially higher than ordinary greensand. The relation between salt consumption and capacity is shown in the chart.

LASTS LONGER . . . Super-Zeo-Dur is tougher and more resistant to abrasion than any other zeolite. Special treatments cleanse and purify it so that the final granule is tougher than ever before. At the same time, these treatments greatly increase its capacity.

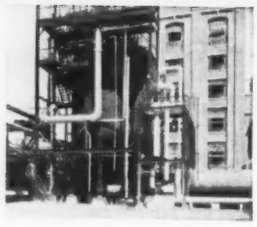
CUTS COSTS NOW . . . Repeated tests prove that Super-Zeo-Dur requires less salt than ever before to obtain water of zero hardness. This economy is maintained in large and small plants alike. The owner saves not only on the cost of his salt, but



Permutit Automatic Zeolite Water Softener. Lowers the cost of producing soft water. No overrunning. No under-regeneration. Automatic controls can be applied to existing equipment. Write for "No Scale, No Sludge, No Mud."



Permutit Continuous Boiler Blow-off Equipment. For continuously maintaining the desired concentration in boilers, with recovery of heat from the blow-off water. Write for Booklet.



Permutit Hot Lime Soda Water Softener. For reducing total solids, particularly in waters of high bicarbonate hardness. Write for information.

CO_2 *Indicators and Recorders.* Ranarex . . . the fully mechanical CO_2 Indicator and Recorder. Strong, rugged, yet with accuracy of 0.3% CO_2. Normal time lag of less than one minute. Fuel savings quickly return its cost. Write for bulletin describing operation.

ZEO-DUR

BETTER ZEOLITE

also on the freight cost of transporting it and the space cost for storing it.

HAS A RESERVE CAPACITY . . . This new zeolite has a flexible capacity. If you need extra water softened, just use proportionately more brine. This flexibility creates a reserve capacity for softening water . . . to be used for emergencies or for increased capacity in the future . . . and requires only a normal increase in brine (see chart).

SUPER-ZEO-DUR has been thoroughly tested by long runs at all ranges of softening capacity. It is a definite money saver. For instance, to remodel existing zeolite water softeners to automatic control and refill them with Super-Zeo-Dur will repay, on the average, 50% per year of the conversion cost. Beside this cash saving, the fully automatic plant operation is simpler and more positive, there is no danger of overrunning, and there is a reserve water softening capacity at hand to meet peak or emergency demands.

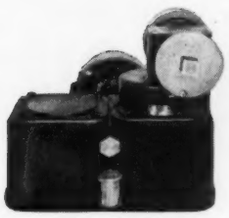
Obviously, with this new zeolite and fully automatic control, the new Permutit zeolite water softeners are the last word in fool-proof, low cost operation.

Super-Zeo-Dur is the most recent addition to the line of Permutit products. There is Permutit equipment to meet every water treating requirement. Some of these products are featured below.

We are always at your service to advise you on your water problems, to produce for you water of the specifications which you desire. Write for information on any of the Permutit products. And be sure to find out just how much money a refill of Super-Zeo-Dur in your present equipment will save you! No obligation . . . just write The Permutit Company, 330 West 42nd Street, New York. N. Y.

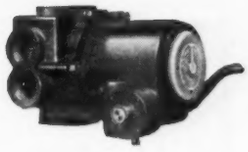
Permutit *Water Treating Equipment*

Heat Exchangers. Turbulence scrubs off stagnant water film from surfaces, permits higher rate of heat transfer. Design allows for unit increases in capacity. Uni-metal construction avoids electrolytic corrosion. Ask for information.



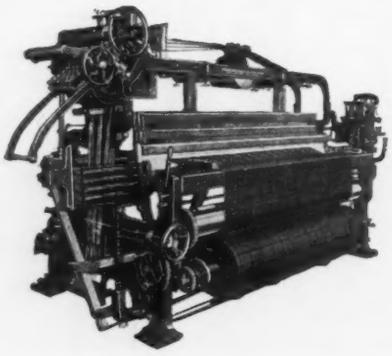
Chemical Feeds. For feeding sulphates, phosphates and other solutions in exact proportion to flow of water. Also constant flow types. Special acid feeds. Feeds for dry materials such as clay. Bulletins available.

Filters. Both pressure and gravity types, in all sizes, for removal of dirt, color and turbidity. Coagulation equipment. Activated carbon filters for removal of bad taste and odor. Send for a free copy of "Water Filters & Filtration Equipment."



Single Valves. To simplify the operation of zeolite water softeners. Made in all sizes, they can be used with existing equipment. Single valves for filters, too. We'll be glad to send you information and prices.

TRADE MARK REGISTERED
NON-FLUID OIL
IN U.S. PAT. OFFICE & FOREIGN COUNTRIES



Helps Looms Earn Greater Profits!

By Keeping Down Oil Stains on Cloth

Profits depend upon the highest output of perfect goods from looms. Oil spots on cloth produce "seconds," which must be reprocessed or sold for less. One way or the other this loss must come out of profits.

Non-Fluid Oil does not drip or leak, but stays in bearings and off goods, outlasting liquid oil 3 to 5 times. Thus it not only prevents oil stains but it also saves money on both lubricant and application cost.

These facts have been so well proven during the past 37 years that over 70% of the leading mills are steady users of Non-Fluid Oil. Make a test on your looms.

Write for helpful bulletin "Lubrication of Textile Machinery" and free test samples

New York & New Jersey Lubricant Co.

Sole Makers of

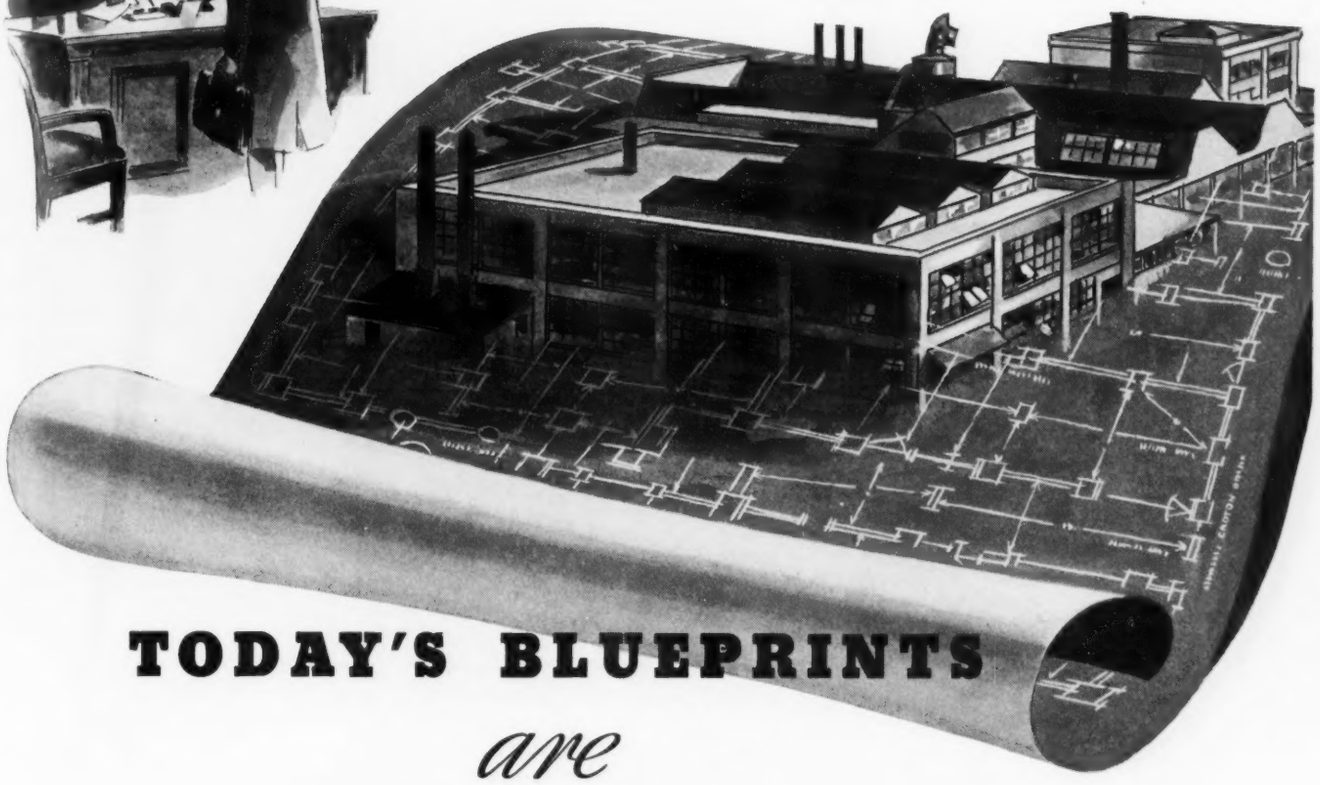
TRADE MARK REGISTERED
NON-FLUID OIL
IN U. S. PAT. OFFICE & FOREIGN COUNTRIES

Main Offices—292 Madison Ave., New York Works—Newark, N. J.

WAREHOUSES:

PROVIDENCE, R. I. DETROIT, MICH. NEW ORLEANS, LA. GREENVILLE, S. C. CHARLOTTE, N. C.
CHICAGO, ILL. ST. LOUIS, MO. SPARTANBURG, S. C. ATLANTA, GA.

"You can be sure of one thing—when our plans go through, they will include your Taylor Temperature Control."



TODAY'S BLUEPRINTS *are* TOMORROW'S MILLS

Will they provide for the most efficient and economical temperature control? Let us help you plan for it NOW.

HERE'S an actual case of far-seeing management. A superintendent already has plans on paper to improve the physical layout of his mill. He has decided on needed modern equipment, including Taylor Temperature Control. He is looking ahead to assure higher and more uniform product quality, greater operating efficiency and lower costs. When economic conditions permit, he is ready to turn blueprints into physical assets.

This selection of Taylor Temperature Control is not unusual. Mills in the North and the South have proved that Taylor Control is one of the most profitable things they ever installed. Taylor Automatic Slasher Control, for example, is saving mills thousands of dollars today on comparatively small investments. One installation saved $30,000 the first year on a $10,000 investment. Another saved $11,000 in less than a year on a $4,000 expenditure.

The reason for all this? Taylor Control involves no quick method of using a collection of individual indicating, recording and controlling instruments. It consists, however, of a specially engineered, unified system of instruments built to fit your mill's particular needs and installed under strict supervision. Taylor engineers pioneered in this type of control work, and they know modern mill operation.

Look into Taylor Control Now

It is sound management today to investigate every possible method for making your mill an even more efficiently operating unit. And it is easy to find out just what Taylor Control can do for you—from Slashing to Finishing.

Let a Taylor man survey your present set-up now, even though economic conditions may delay putting more extensive control into operation. Then you'll be ready to profit from it quickly at the right moment. For this help, address the Taylor Sales Offices in Atlanta, Boston, or Toronto, Canada. Or write Taylor Instrument Companies, Rochester, N.Y.

Taylor

Indicating Recording • Controlling

TEMPERATURE, PRESSURE *and* FLOW INSTRUMENTS

815 10-27 6M

THE PROCTER & GAMBLE CO.

CHEMICAL DIVISION

IVORYDALE, OHIO

PLEASE ADDRESS REPLY TO
IVORYDALE, OHIO

TEXTILE RESEARCH DEPARTMENT

December 6, 1934

Mr. D. L. Gardner,
Cheviot Woolen Mills,
Cheviot, Mass.

Dear Mr. Gardner:

The evident success of the fulling trials made with Olate in your mill last week, has been confirmed by our laboratory tests. Solvent extraction of samples of the finished fabrics showed an average of only 0.1% unscoured oil, with not over 0.2% in any one sample.

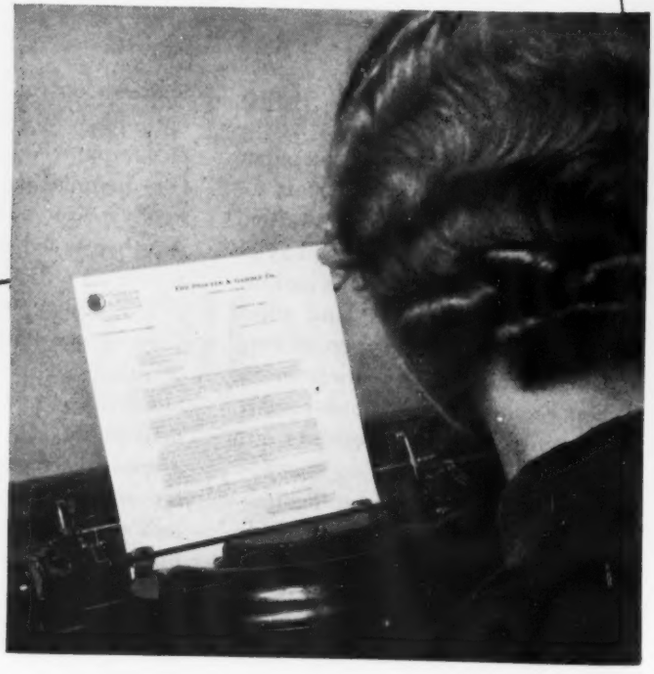
Numerous tests have shown that these low figures are necessary on this type of fabric to prevent cloudiness and unpleasant odor. Using Olate by the methods worked out to fit your conditions, you should have no difficulty in maintaining this high standard of work and eliminating considerable re-scouring.

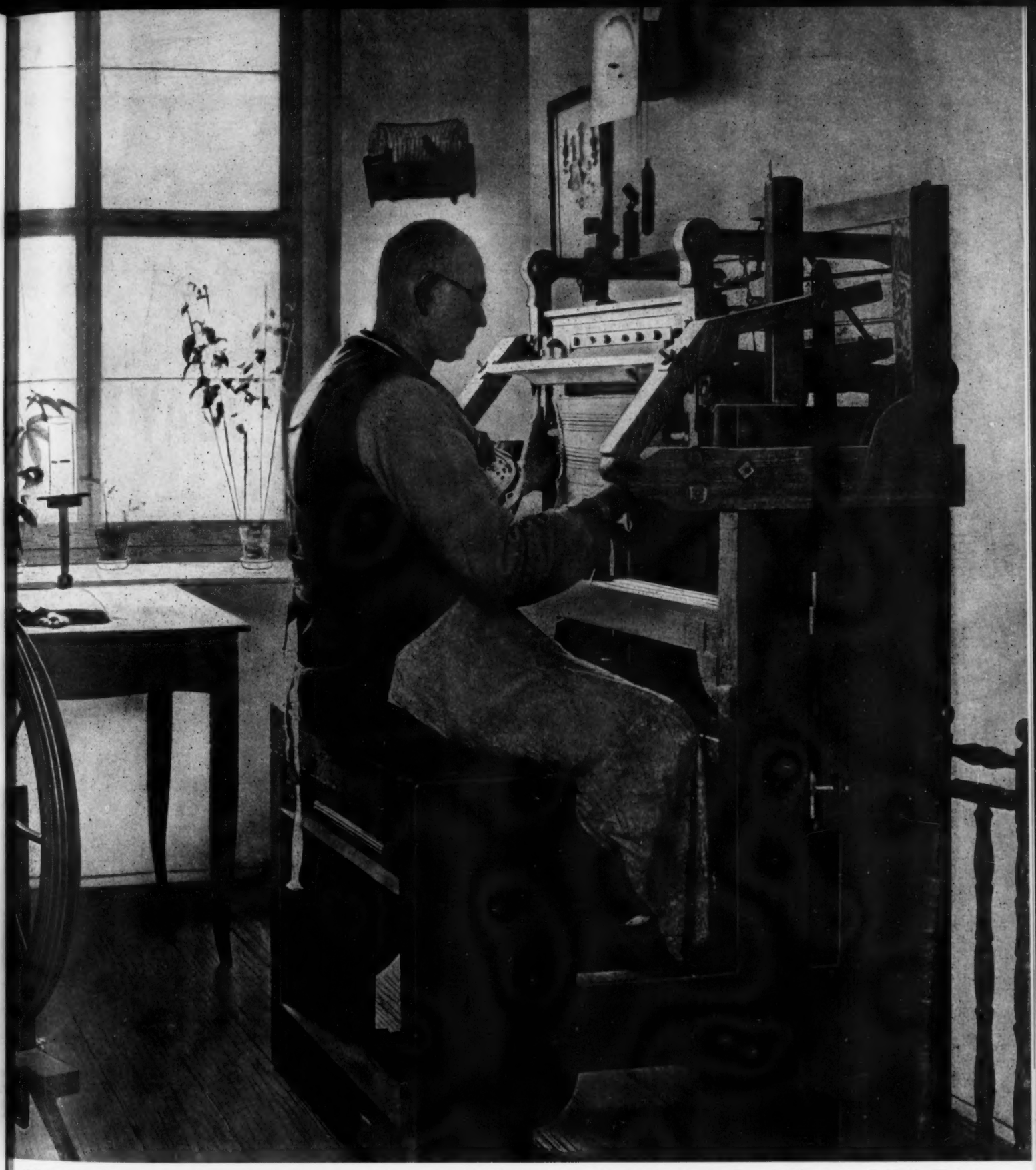
While we could not share your finisher's surprise at the rapid and even fulling action of Olate, we are much gratified that he so thoroughly convinced himself and you of this fact. We believe he will make the most of the advantages possible with Olate — ease of preparing solutions, their liquid condition even when cold, convenience of handling, immediate absorption and even distribution in the cloth, its thorough felting action and resistance to breaking down in the mill.

We are confident that you will be more than satisfied with the output of your finishing room. You can depend upon uniformly good results from the uniform high quality of Olate.

Very truly yours,

THE PROCTER AND GAMBLE COMPANY
Textile Research Department.





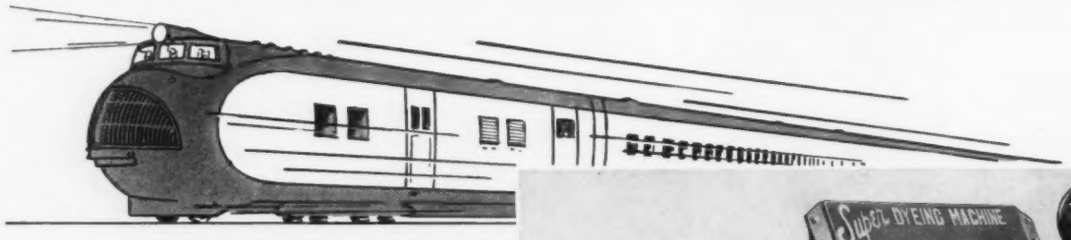
This hand-and-foot operated machine, introduced about 1589, remained the standard for full-fashioned knitting for more than 300 years. (From the Library of Textile Machine Works)

In a 40-hour week the new READING high-production twenty-four section forty-five gauge full-fashioned knitting machine produces nearly sixty per cent more volume and more than seventy-five per cent more value than the ordinary eighteen-section thirty-nine gauge machine.

TEXTILE MACHINE WORKS • READING, PA.

GOOD EQUIPMENT "WAY BACK WHEN"

BUT NOT GOOD ENOUGH TODAY!



LONG ago the railroads realized the need for faster, more practical rolling stock. They developed the coal-burning Twentieth Century locomotive—then the Diesel-powered "Bullet" streamline train.

Long ago the manufacturers of hosiery dyeing machines realized the need for faster, more practical, cheaper operating equipment. Wood was replaced with Monel Metal—then RE engineers developed the ALL MONEL METAL SUPER! And just as the "Bullet" enables railroads to give better service at lower cost, so does the SUPER bring new-day economics and improved results to hosiery dyers everywhere.

The Rochester SUPER will do more work and better work for you. It prevents snags. It dyes all classes of hosiery with a uniformity of color never before possible. The SUPER of today is priced lower than the old, antiquated models. And the SUPER repays its first cost in a hurry out of the money it saves. In a size for your requirements—write!

The 30" x 36" Rochester SUPER All Monel Metal Rotary Hosiery Dyeing Machine.

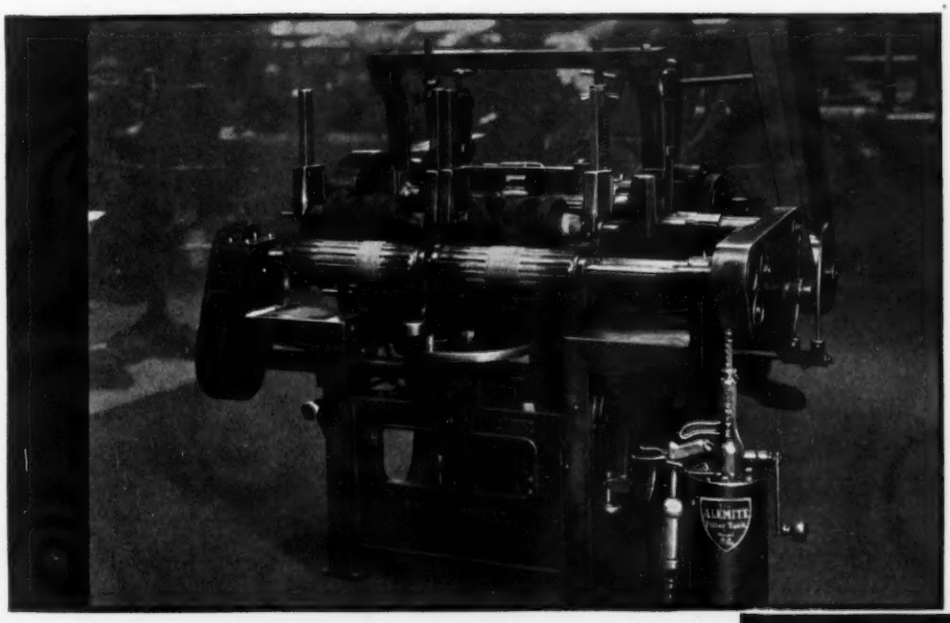
ROCHESTER ENGINEERING & CENTRIFUGAL CORPORATION

110 Buffalo Road, Rochester, N. Y. ***(Branches in six principal cities)***

RE PRODUCTS

ANOTHER *Saving* WITH ALEMITE!

Job of Lubricating Gill Boxes Cut 75% at Woonsocket Dyeing and Bleaching Co. by Alemite Hydraulic Lubrication System



before..

This machine which combs yarn, stretches it, and dampens it if necessary, has 32 points of lubrication. It was formerly necessary to oil all parts twice daily.

after..

With the installation of an Alemite system, lubrication is necessary only every *second day,* with No. 33 Alemite lubricant.

Let Alemite Lubrication Specialists Submit FREE Recommendations

● This is just one of the hundreds of cases in which textile plants are making substantial new savings with the Alemite Hydraulic Lubrication System. Change-over to this equipment from old lubricating methods is accomplished easily, at a low cost which quickly pays for itself —in greater efficiency, as well as in direct time and material savings.

In ordering any new machine equipment, specify Alemite Hydraulic Lubricating System. The Alemite Corporation cooperates with all important machinery manufacturers in adapting this system to any equipment.

At no cost or obligation to you the services of lubrication specialists from the Alemite laboratories are offered—to analyze your lubrication requirements and make free recommendations for changes which will cut your costs and increase your production efficiency. Savings and replacement of parts alone is often enough to pay a generous dividend on the investment in modern scientific lubrication. For free consultation service just mail the coupon herewith.

ALEMITE CORPORATION, *Division of Stewart-Warner Corporation*
1888 Diversey Parkway Chicago, Illinois

ALEMITE *Specialized* **LUBRICATION**

Reg. U.S. Pat. Off.

ALEMITE CORPORATION
Department L
1888 Diversey Pkwy.
Chicago, Illinois

NRA CODE

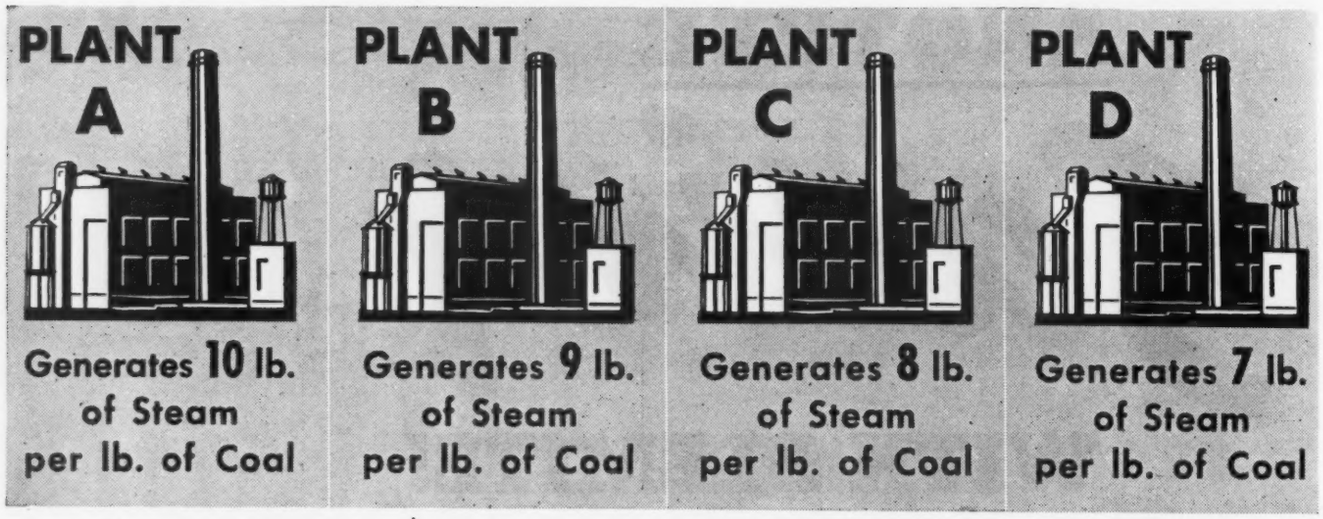
With no cost or obligation to us, we are willing to have an analysis made by an Alemite lubrication specialist to learn if we, too, can make substantial savings in labor, material, and part replacements by improved lubrication methods.

*Name*_____

*Position*_____

*Address*_____

*City*_____ *State*_____


PLANT A
Generates 10 lb. of Steam per lb. of Coal
PLANT B
Generates 9 lb. of Steam per lb. of Coal
PLANT C
Generates 8 lb. of Steam per lb. of Coal
PLANT D
Generates 7 lb. of Steam per lb. of Coal

C-E PRODUCTS

BOILERS
C-E Sectional Header Boiler
C-E Box Header Boilers
C-E Bent Tube Boilers
C-E Fire Tube Boilers
C-E Electric Boilers
C-E Marine Boilers

STOKERS
C-E Multiple Retort Stoker
Type E Underfeed Stoker
C-E Stoker-Unit
(for small boilers)
Type H Stoker
(for industrial furnaces)
Coxe Traveling Grate Stoker
Green Chain Grate Stoker
(natural draft)
Green Chain Grate Stoker
(forced draft)

PULVERIZED FUEL SYSTEMS
(for boilers and industrial furnaces)
C-E Storage System
C-E Direct Fired System
Raymond Pulverizing Mills

FURNACES
C-E Water Cooled Furnace
C-E Water Screen
C-E Slagging Furnace

COMPLETE UNITS
Combustion Steam Generator
(a unit of standardized overall design)
Coordinated designs comprising any combination of boiler and firing equipment

ALLIED EQUIPMENT
C-E Air Heaters
(plate and tubular types)
C-E Economizer
C-E Oil Burners
Grieve Grates
C-E Ash Conveyors
C-E Ash Hopper

PULP MILL EQUIPMENT
Improved Murray-Waern System
(for chemical and waste heat recovery)

SEWAGE EQUIPMENT
C-E Raymond System
(for sewage sludge incineration)

FABRICATED PRODUCTS
Pressure Vessels, Tanks, Towers, etc.
(welded or riveted fabrication—carbon, alloy or clad steel)

WHICH PLANT IS YOUR PLANT?

For every $1000 worth of coal purchased by Plant A

Plant B must buy $110 worth additional
Plant C must buy $250 worth additional
Plant D must buy $430 worth additional

Which means that on the basis of an annual expenditure by Plant A for coal amounting to:

	$10,000	or $25,000	or $40,000	or $100,000
Plant B annually wastes	$1,100	2,750	4,400	11,000
Plant C annually wastes	2,500	6,250	10,000	25,000
Plant D annually wastes	4,300	10,750	17,200	43,000

As you know, these losses, in many cases, can be stopped. Let us help you to show your company management what economies can be made in *your steam plant*—what it will cost—and how quickly that cost can be repaid out of savings.

C-E

COMBUSTION ENGINEERING COMPANY · INC

200 MADISON AVENUE • NEW YORK, N. Y.
Canadian Associates, Combustion Engineering Corp., Ltd., Montreal

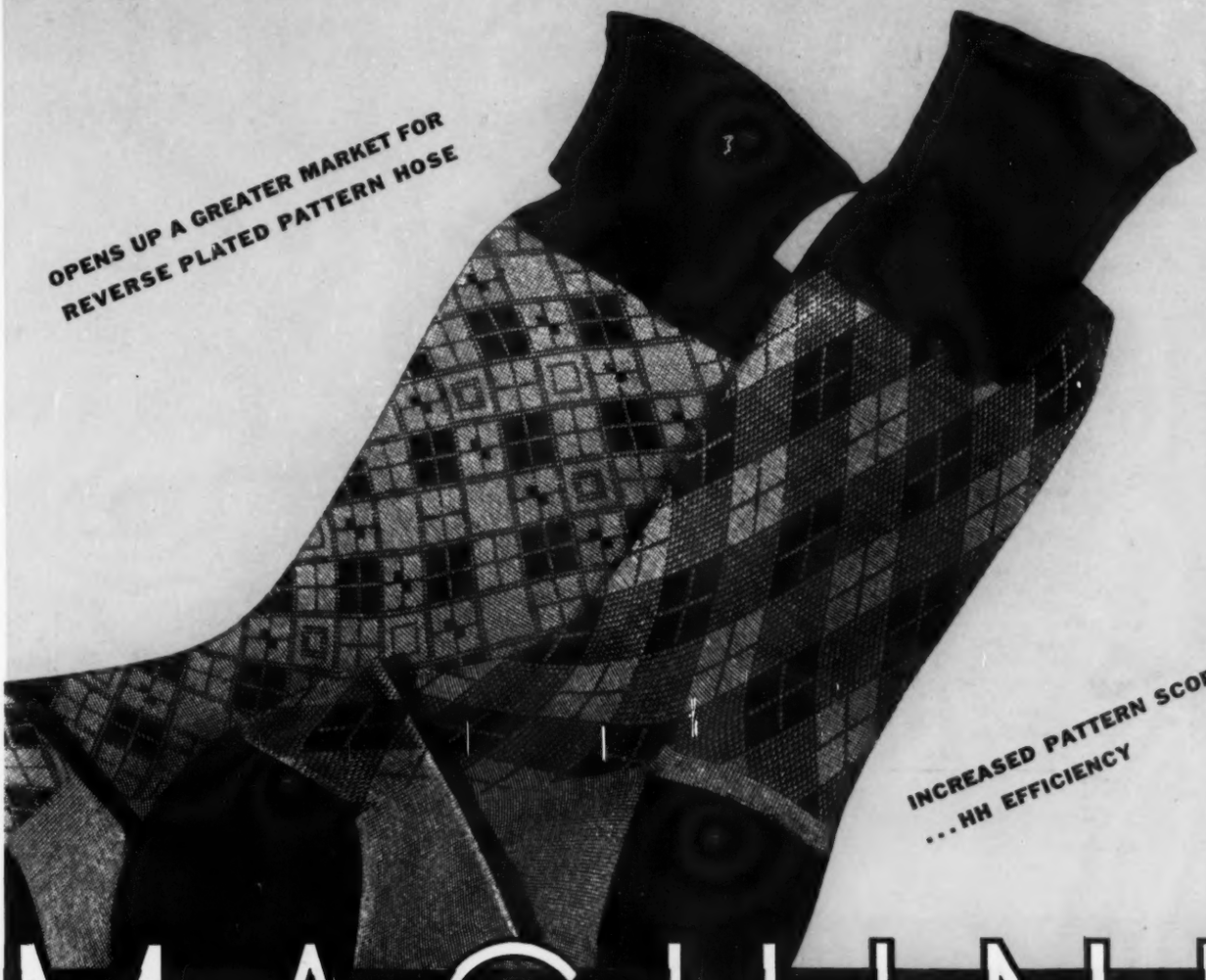
A124b

MANUFACTURING PLANTS

The Hedges-Walsh-Weidner Company, Chattanooga, Tenn.; Coshocton Iron Company, Monongahela, Pa.; Raymond Brothers Impact Pulverizer Company, Chicago, Ill.; Heine Boiler Company, St. Louis, Mo.

NEWS

HH NRP



MACHINE

The well known, clean and simple method of needle reverse plating is incorporated in the 25 Step Spiral HH Machine.

Reversing on single needles or multiple needles, the results are extremely clean cut.

The HH NRP (needle reverse plating) Machine makes available a greater market for this type of merchandise because of a tremendously increased pattern range and, of course, lower cost due to traditional HH efficiency.

The HH NRP Machine fills today's market demands.

"THIS IS THE SCOTT & WILLIAMS MACHINE AGE"

ESTABLISHED 1865

SCOTT & WILLIAMS

INCORPORATED

366 BROADWAY, NEW YORK, N. Y.

THEY'RE SAYING IT WITH BLOCKS

STANDARD MODEL H
GIVES
PRODUCTION and ECONOMY

The Standard Model H machine has an enviable record of service. More and more it is the recognized leader for children's plain and striped hosiery.

Remember its two important virtues—PRODUCTION and ECONOMY.

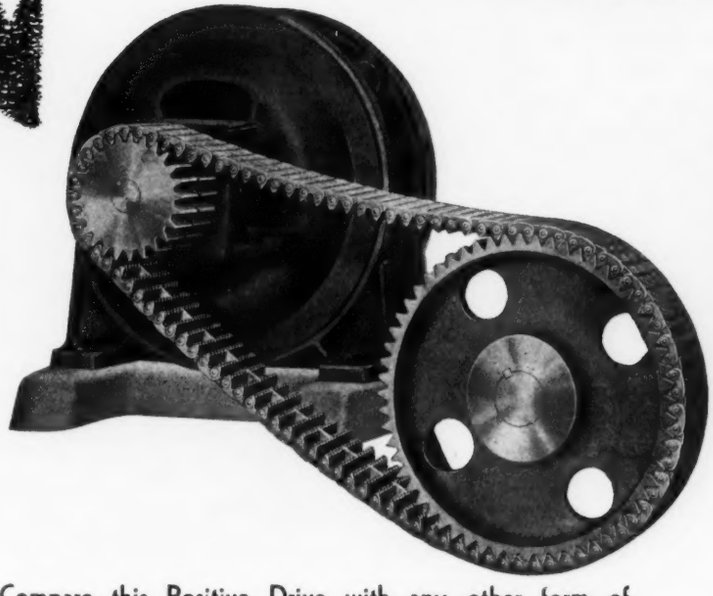
STANDARD TRUMP
Established 1872

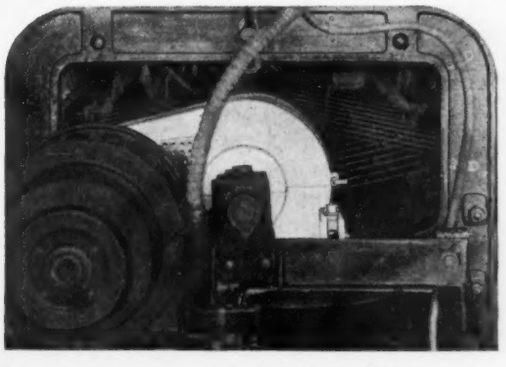
STANDARD-TRUMP
BROS. MACHINE CO., INC.
366 BROADWAY, NEW YORK, N. Y.

It Costs so Little to Transmit Power with the Positive

LINK-BELT SILVERSTREAK SILENT CHAIN DRIVE

TRANSMITS FULL SPEED . . . SAVES POWER . . .
LASTS LONGER . . . ASSURES UNIFORM PRODUCT . . .
MAINTAINS PRODUCTION . . . SAVES SPACE . . . CHAIN
EASILY REPLACED . . . SAVES UPKEEP . . . COSTS LESS





Showing the improved Link-Belt Tex-Til Automatic-Lubricating Silent Chain Drive Casing which absolutely prevents oil leakage and assures a cool-running drive.

Compare this Positive Drive with any other form of power transmission from the standpoint of cost, upkeep and efficient performance, and you will reach the conclusion that it is the most economical drive for your equipment.

Link-Belt Silent Chain Drives are made for any horsepower, and stocked by us and our distributors in sizes up to 60 H.P. Ask for Data Book 125 and Pink Stock List 725. Address nearest office.

LINK-BELT COMPANY 5039-A

Leading Manufacturers of Positive Power Transmitting Equipment

INDIANAPOLIS - CHICAGO - PHILADELPHIA - ATLANTA
SAN FRANCISCO - TORONTO - BOSTON - NEW YORK
BALTIMORE - DALLAS - NEW ORLEANS

Offices in Principal Cities

LINK-BELT POSITIVE DRIVES INCLUDE:

Silverstreak Silent Chain Drives . . . Silverlink Roller Chain Drives . . . Herringbone Speed Reducers . . . Worm Gear Speed Reducers . . . Motorized Reducers . . . Variable Speed Transmissions (P.I.V. Gear and V.R.D. types) . . . Chain Drives of all types . . . Herringbone Gears.

LUSTRE AND FEEL
critical buyers prefer

"ALL wool and a yard wide" is no longer the only index of value. Lustre, feel and other instantly recognizable ear-marks of quality now made possible by Bristol's Automatic Control of Processing Temperatures are not to be overlooked in the effort to obtain a competitive sales advantage.

In scouring, for example, where such very large quantities of wool are handled that in comparison with the possible savings in steam alone the cost of Bristol's Control is trifling, the maintenance of correct temperatures is of major importance. Even a slight overheating of the scouring bowl and rinsing bath may represent a costly waste of fuel, as well as cause serious damage to the strength and life of the fibres. On the other hand, low temperatures will not permit proper cleaning,—and will often be responsible for trouble that may develop later in gummed cards and irregularities in dyeing and finishing.

Here as elsewhere, the uncertainties of manual manipulations are unmistakably and rapidly giving way to Bristol's Automatic Process Control and the strict uniformity in product quality which it assures.

Bristol's Full Floating Free Vane Air Operated Temperature Recorder Controller, Model 5340-M.

THE BRISTOL COMPANY, WATERBURY, CONNECTICUT

Branch Offices: Akron, Birmingham, Boston, Chicago, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco. Canada: The Bristol Company of Canada, Ltd., Toronto, Ont. England: Bristol's Instrument Co., Limited, London, S.E. 16.

TRADE MARK

BRISTOL'S

REG. U. S. PAT. OFF.

PIONEERS IN PROCESS CONTROL SINCE 1889

Sheer perfection quickens the pulse.

In the final analysis, needles are bought for—and judged by—their ability to produce a quality fabric. That we are America's largest producers of Spring-Beard Needles and that nearly all manufacturers of fine quality full-fashioned stockings are standardized on Royersford Needles is a tribute to dependable performance.

The preservation for better knitting

ROYERSFORD NEEDLE WORKS, INC., ROYERSFORD, PENNSYLVANIA

Southern Office: Provident Bldg., Chattanooga, Tenn. • Louis Hirsch Textile Machines, Inc., Special Representatives

ROYERSFORD NEEDLES

The perfected water-vapor principle of the new

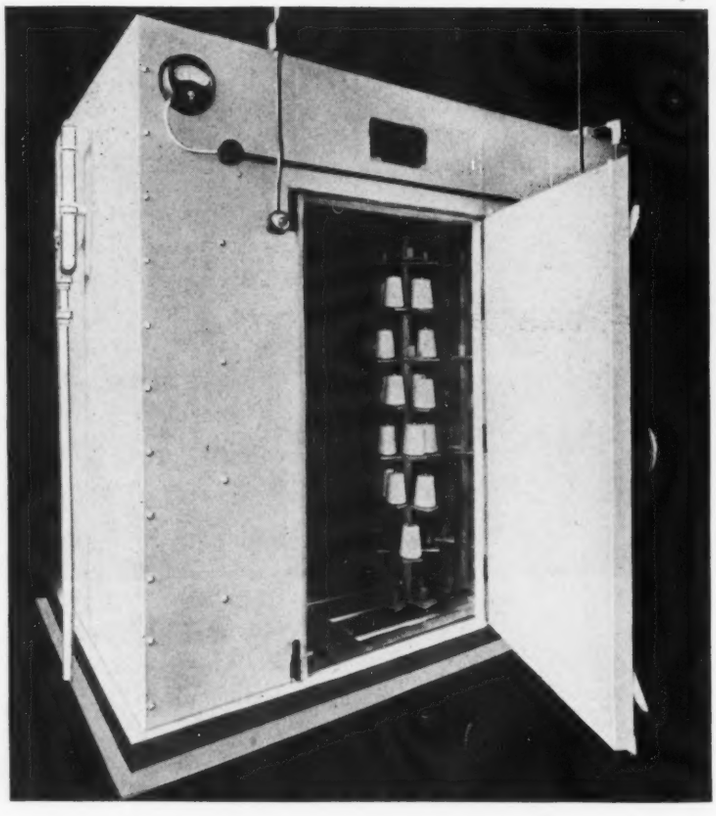
"H-W" CONDITIONER

assures thorough, uniform penetration down to the last fibre.

ATOMIZATION with spray nozzles and other mechanical means, no matter how fine, can never condition yarns properly. It merely soaks the yarn. The moisture must be in the form of vapor in order to penetrate uniformly and moisten every fibre to the correct degree.

The "H-W" CONDITIONER is the only apparatus in which the air is maintained 100% saturated with a true water vapor. Backwinding and other expensive methods of conditioning are entirely eliminated. Costly seconds are reduced to the minimum.

It will pay you to find out all about this perfect method of conditioning, how simple it is to use, how little it costs to operate, how accurate and thorough it is and performance proof that it will pay for itself in quick time. Full information gladly sent on request.



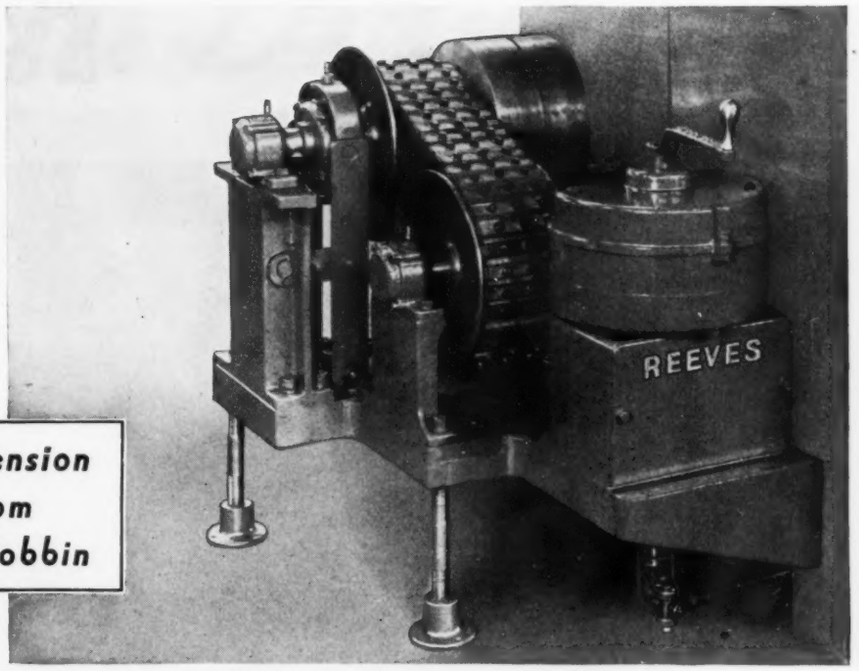
THE INDUSTRIAL DRYER CORPORATION

STAMFORD, CONNECTICUT

NEW REEVES Variable Speed SPINNING FRAME DRIVE

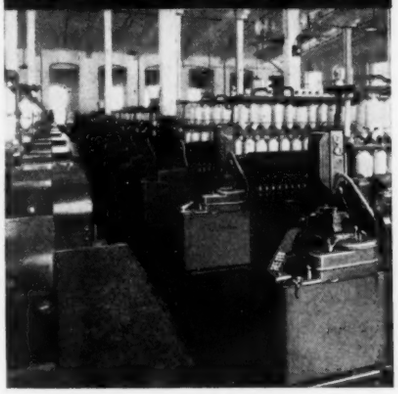
Latest addition to* REEVES *line of Variable Speed Control Units provides automatic regulation of belt-driven spinning frames—each frame controlled individually, taking its power from overhead motor or line-shaft.

Insures Even Tension On Yarn from Empty to Full Bobbin



New Belt-driven Unit with Cover Guard Removed

IMPROVED INDIVIDUAL MOTOR DRIVE



Typical Mill Installation

AUTOMATIC speed regulation—long desired for Spinning Frames—became a reality when the REEVES Variable Speed Spinning Frame Drive was introduced two years ago. Now this Individual Drive tested in hundreds of installations—improved and refined—is demonstrating its sensitive and dependable control in an increasing number of mills. May be installed on old or new Frames. Uses any standard motor, old or new. Requires no more space than a standard Spinning Frame motor with multiple V-belts or enclosed chain drive.

THIS new design is another important development by REEVES to effect better spinning conditions through automatic control of yarn tension from empty to full bobbins.

The many advantages made possible by the REEVES Individual Motor Spinning Frame Drive are secured with this new belt-driven unit—an even yarn tension and twist, more uniform yarn size, less end breakage, greater elasticity, production increase, and immediate changes in speed—when changing yarn sizes—without loss of production.

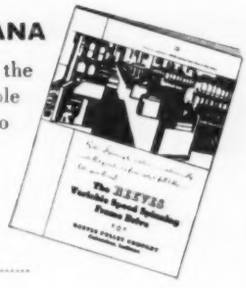
As on the REEVES Individual Motor Drive, there are two types of Automatic Control—one for filling and combination build and the other for warp build. Both permit starting at a slow speed on an empty bobbin, gradually increasing speed as the bobbin fills, running at high speed in the center and slowly decreasing during the last of the doff. ANY low or high between the limits of the DRIVE may be obtained as well as ANY rate of increasing or decreasing.

This new belt-driven Unit is easily installed. Bolts directly to the spinning frame, making a rigid, positive compact and sturdy drive of utmost simplicity. Adjustable motor base can be furnished for changing to individual motor drive, when desired. Write today for new folder, giving complete details of construction and operation.

For Complete Information—Mail Coupon for Bulletin

REEVES PULLEY CO., COLUMBUS, INDIANA

Please send copy of your Bulletin W-800 which describes the operation and construction of the new REEVES Variable Speed Spinning Frame Drives and how they are applied to new or old frames.



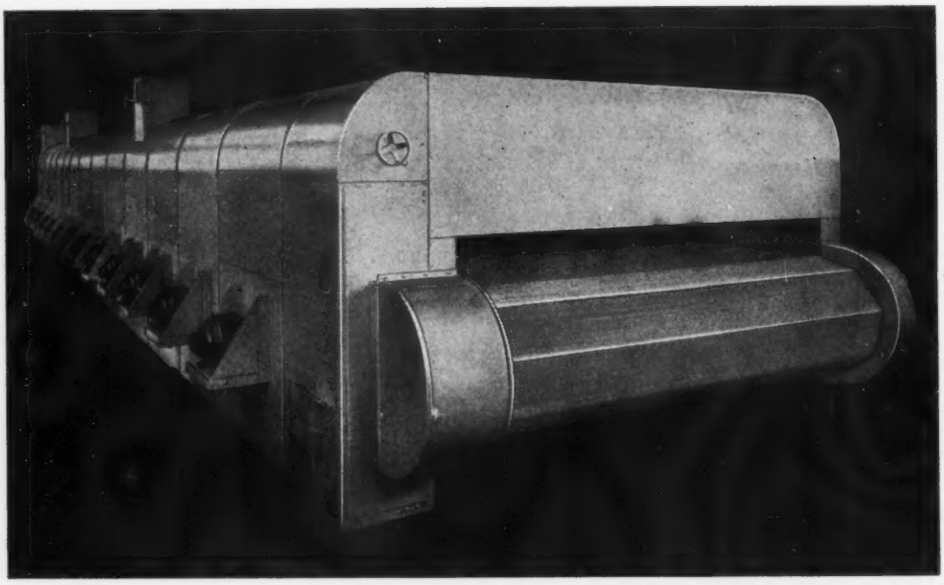
Name.....

Company.....

Address.....

(12-34)

Modern Drying Equipment—



Sargent Stock Dryer

NEWEST DESIGN

A leader in its field. This Sargent Stock Dryer has proven its worth to many satisfied users. This general acceptance by owners can be attributed only to the superiority of design, materials and workmanship so characteristic of these machines.

FEATURES:

Centrifugal fans, direct motor connected, New type coils, Sectional Conveyor with speed control.

—THE NEW CURVED TOP—

reduces air resistance—promotes free air flow.

SARGENT PRODUCTS

Acidifying Machine—Automatic Extractor—Automatic Feeders—Backwashers — Backwash Dryers — Bagging Machines—Ball Winders—Carbonizing Dryers — Cloth Dryers — Carbonizing Dusters — Cotton Stock Dryers — Crush Roll Machines — Press Roll Machines—Single Apron Dryer—Skein Dryer—Special Dryers — Wool Dryers — Wool Washers — Yarn Conditioners — Yarn Scouring Machines.

C. G. SARGENT'S SONS CORPORATION

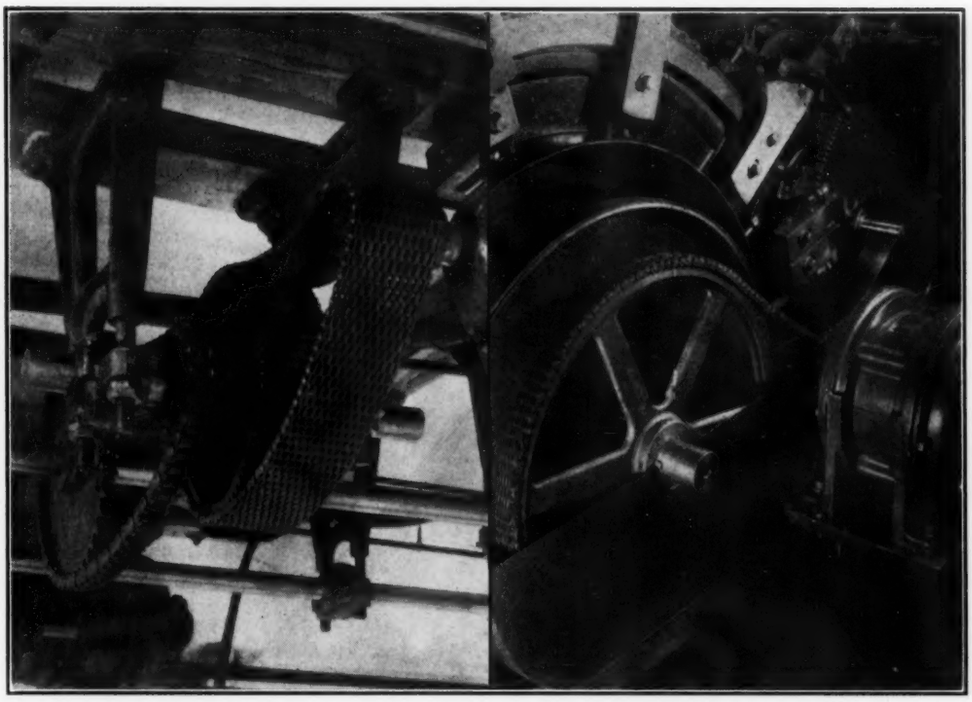
Graniteville, Mass.—Founded 1852

Southern Agents:
Fred H. White, Charlotte, N. C.
Fred P. Brooks, Atlanta, Ga.

Philadelphia Agent:
F. E. Wasson
205 Ledger Bldg.

Sargent is the Pioneer American Builder of Dryers

Chain Drives



..for production profits

INDUSTRY today, more than ever before, is studying the problem of putting power on the job. No longer is it satisfied to allow power transmission losses to take the profit out of production.

Chain Drives have always had wide acceptance in industry where economy of operation has been essential. Their inherent characteristics are opposed to power losses, whether used as line shaft drives or unit drives. Today more than ever before it will pay to consider chain drives in any power saving program.

Whitney engineers will gladly cooperate on your power drive problems.

THE WHITNEY MFG. CO. ★ HARTFORD, CONN.

BOSTON
CLEVELAND
NEW YORK
SAN FRANCISCO

WHITNEY

CHICAGO
DETROIT
PHILADELPHIA
SYRACUSE

RELIANCE MOTOR-DRIVES FOR ROPE SOAPERS IN RANGE

Straight-run Layouts keep cloth on the move

HERE'S another way that finishing plants are using straight-run layouts to save space and keep cloth moving faster with less in-between handling.

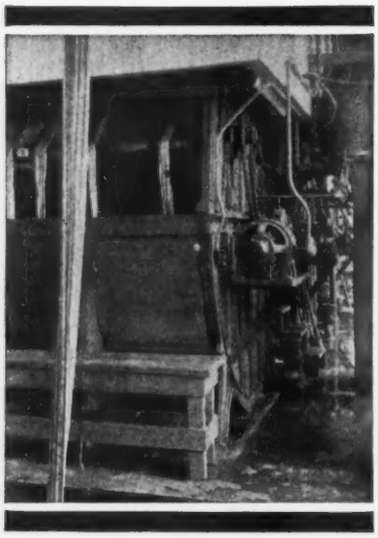
Simplified transmission parts improve overhead conditions and help to lessen upkeep.

Power is used more efficiently and controlled with ease and safety.

Motors are kept in step and slack in the material taken up automatically by the use of compensating gates with motor field rheostats between sections.

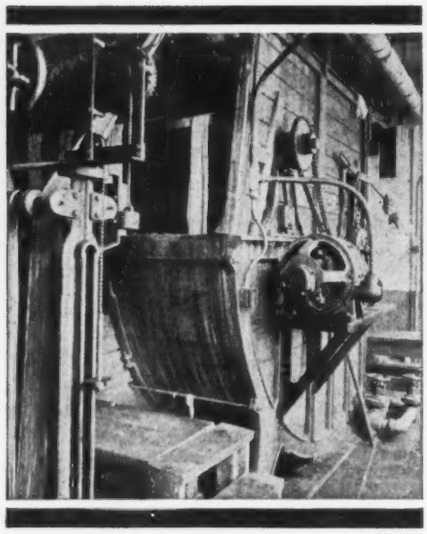
● ● ●

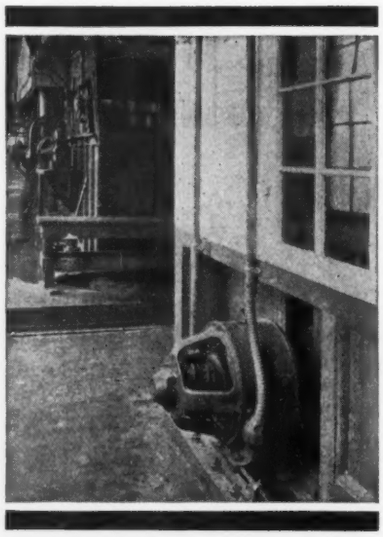
You are invited to make use of the experience gained by Reliance men in aiding other finishing plants to develop motor-drives for straight-run layouts. No obligation is incurred.



Three Rodney-Hunt Rope Soapers operating in range. A 5 hp. 850/1275 r. p. m. Type T Reliance Motor is used for one soaper from which a squeezer is also driven. 3 hp. 850/1275 r.p.m. motors are used on the others.

Third soaper in the range. At the left is the compensating gate with motor field rheostat which is operated automatically as the slack on the rope varies. This keeps the adjoining soaper in step with this one.





The motor in the foreground (7½ hp. 400-1600 r.p.m.) drives 31 drying cylinders and scutcher. The cylinders are operated in range with the three rope soapers in the background but speeds are controlled by hand to suit conditions

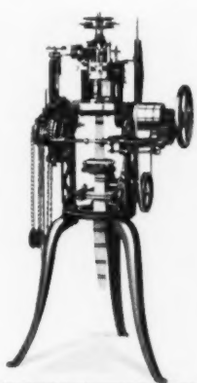
RELIANCE A-C D-C MOTORS

RELIANCE ELECTRIC AND ENGINEERING COMPANY
Ivanhoe Road, Cleveland, Ohio

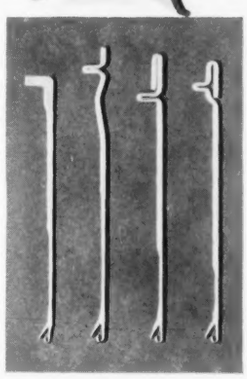
Branches: Birmingham : Boston : Buffalo
Chicago : Cincinnati : Detroit : New York
Philadelphia : Pittsburgh : Washington
Representatives in other principal cities

Fine FABRICS

Fine fabrics aren't easy to make. They require careful attention to details. The material and the instruments used in the knitting must be chosen with the strictest regard for quality. Fine yarn is essential. And good needles are indispensable. A good machine is necessary. With these three in the skillful hands of a good knitter, the result is faultless work—fabrics that reflect credit on the mill that makes them . . . and command admiration from the people who buy them. Good needles always pay. They make friends of the buyer and the seller. Torrington needles have many friends the world over . . . in every country where fabrics are knitted. For knitters know that Torrington needles are made by machine with all the accuracy and precision that modern methods have developed.



The socks with the fine lace tops shown in the illustration were made at the Locke Hosiery Mills, Philadelphia, on a Brinton Rib Lace machine with Piquot Edge 4 Color Yarn Change. The needles were TORRINGTONS.



The Torrington Company

ESTABLISHED 1866

Torrington, Conn., U.S.A.

BRANCHES:

THE TORRINGTON COMPANY,	1640 FAIRMOUNT AVE.,	PHILADELPHIA
THE TORRINGTON CO., INC.,	200 FIFTH AVE.	NEW YORK, N. Y.
THE TORRINGTON COMPANY,	538 SOUTH WELLS ST.,	CHICAGO, ILLINOIS
THE TORRINGTON COMPANY	UNITED BANK BLDG.	GREENSBORO, N. C.
THE S. M. SUPPLIES CO.	210 SOUTH STREET	BOSTON, MASS.
LOS FABRICANTES UNIDOS,	964 CALLE BELGRANO,	BUENOS AIRES

FACTORIES AT:

TORRINGTON, CONN. • UPPER BEDFORD, QUEBEC
COVENTRY, ENGLAND • AACHEN, GERMANY

TORRINGTON *Latch* NEEDLES

FOR A QUICK THOROUGH
RENEEDLING JOB
use our philadelphia plant

We maintain a staff of highly skilled reneedling experts at Philadelphia. They are trained to give you fast, efficient service. You'll like the thorough job they'll do for you. Because keeping your bars in perfect working condition brings you profits from steadier production, we pay special attention to reneedling... and make a point of doing it in the quickest and most economical way. Here are six reasons why a Torrington reneedling job is always satisfactory:

1 When your bars arrive they are placed on individual trucks. They get a "job" number, and each job is kept intact throughout the reneedling; you get back your bars with plates reassembled exactly as received.

2 Reneedling by Torrington begins with a thorough cleaning of bars . . . by washing in a special fluid . . . by scrubbing, almost polishing, with revolving brushes especially made.

3 We straighten all bars—with a simple but effective device which springs them into shape. We straighten plates, too—and resurface the brasses, taking out the high and low spots which interfere with even pressure on the needles. We check all slots—mechanically—opening up those that have closed, narrowing the wide ones.

4 Then we fill your bars with all new Torrington needles; straighten the needles; gauge them three ways—(a) at the spot where they emerge; (b) a quarter inch below the groove; (c) at the very top of the needle. We space the needles by gauge, not eye.

5 We raise the beards uniformly, and check them (with gauges, too) for height and for central setting with the groove.

6 We are equipped to do fast work. Bars received one day can be returned the next. Philadelphia is convenient to the Full-fashioned industry—easily reached by express, fast freight or truck.

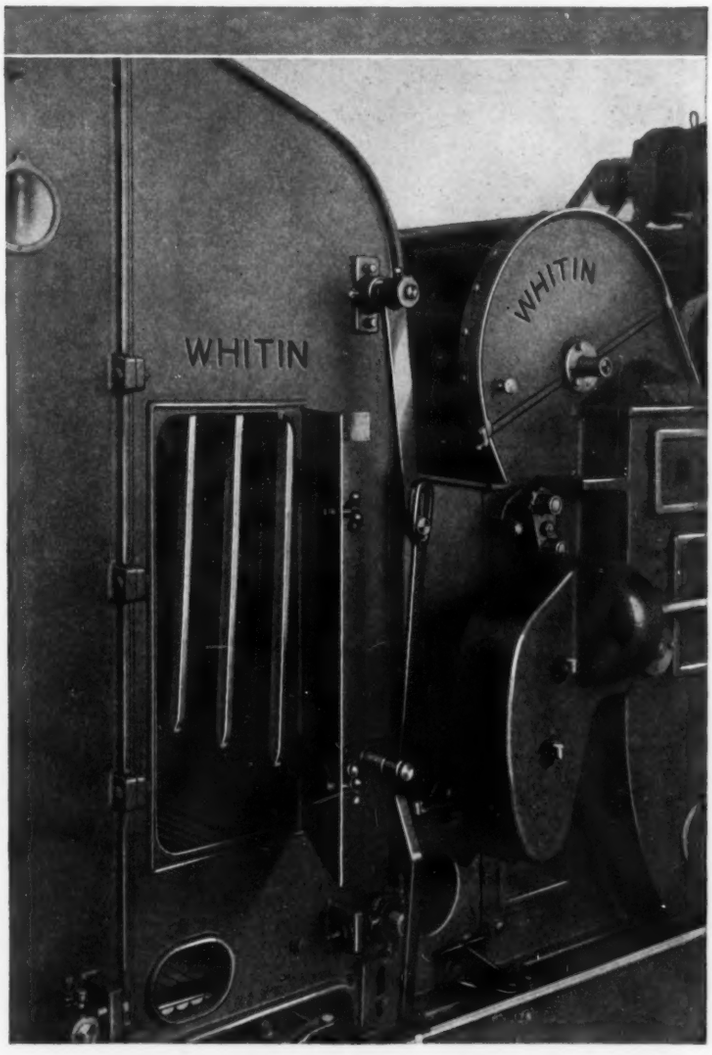
THE TORRINGTON COMPANY

ESTABLISHED 1866, TORRINGTON, CONN., U. S. A.

RENEEDLING BRANCH: 1640 FAIRMOUNT AVENUE, PHILADELPHIA, PA.

The WHITIN 1934 Picker Installation

the result of more than one hundred years of progress in building Preparatory Machinery



Why use an Intermediate Feeder in a One Process Picker?

BECAUSE cotton deposited unevenly on the cages due to air drafts, unless corrected by the Intermediate Feeder, *is carried forward to the cages in the next section in the same uneven sheeet.* The Intermediate Feeder corrects uneven distribution of the cotton across the width of the cages.

BECAUSE the large capacity hopper in the Intermediate Feeder *aids in the proper opening and blending of the stock.*

BECAUSE the supply of cotton in the hopper can be maintained within very close limits, which permits the cone belt *to work in a narrow range of the cone surface at all times.*

BECAUSE reducing the work which the Evener belt has to do permits the Evener to function more efficiently. The Evener cone belt *has less power to transmit in controlling the Feed preceding the finisher section.*

The stock is evened BEFORE it reaches the Feed Rollers

All parts readily accessible for rapid adjustment. Cleanout doors conveniently located, of ample size. Ball-bearings used generously throughout wherever practical and advantageous.

WHITIN MACHINE WORKS **WHITIN** WHITINSVILLE, MASS.

Rayon Patterns

Made in endless variety —
Changed with instant ease —

New designs—different float and tuck stitches—*whatever* fashion calls for—are produced by the simple turning of a button at each feed or the setting of the presser cams. This fine gauge machine has a set of 12 presser cams at each feed.

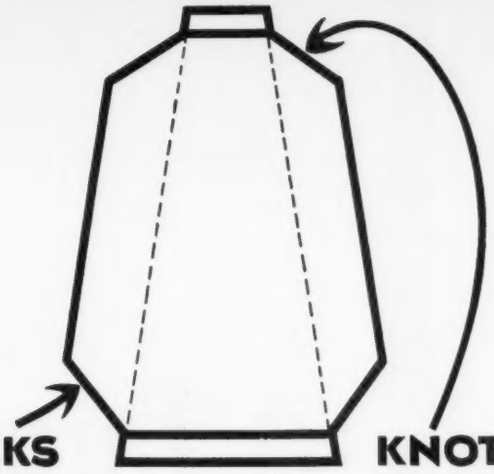
Literature on Request.

WILDMAN MFG. CO.
Full-Fashioned Division
NORRISTOWN, PA.

WILDMAN
SPRING NEEDLE BODY MACHINE

WILDMAN
THE WORLD'S STANDARD

PINEAPPLE CONE *reduces* PRESS-OFFS (OTHER THAN MECHANICAL) 40%



NO PLUCKS **KNOTS ARE SAFE HERE**

Proof

Knitting mills already using the recently-developed Pineapple Cone are reporting an average reduction of 40% in the number of press-offs caused by the thread (other than mechanical).

Reasons

1. Tapered end eliminates need of pads; no chance for plucks on the bottom of the cone.
2. Tapered end assists winding operator in placing knots out of way of silk running off.

Other Advantages

1. Reduces waste made by unravelling while topping on.
2. More surface area for better conditioning.
3. Made with 4 winds.
4. Absolute uniformity—more first quality production.

Knitters!

Specify Pineapple Cones. If you do your own throwing, write us about the taper-end winding attachment for the Universal No. 50. If you buy your cones, ask your regular throwster. If he cannot supply you, write Dept. A., Boston, for names of throwsters who can.

Throwsters!

Already many throwsters have installed the new taper-end winding attachment for pineapple cones on their Universal No. 50 machines. Many knitters are now specifying Pineapple Cones. This is your opportunity to get a share of this new cone business. Write Dept. A., Boston, for facts and figures.

DESIGNED ESPECIALLY FOR THREE CARRIER KNITTING

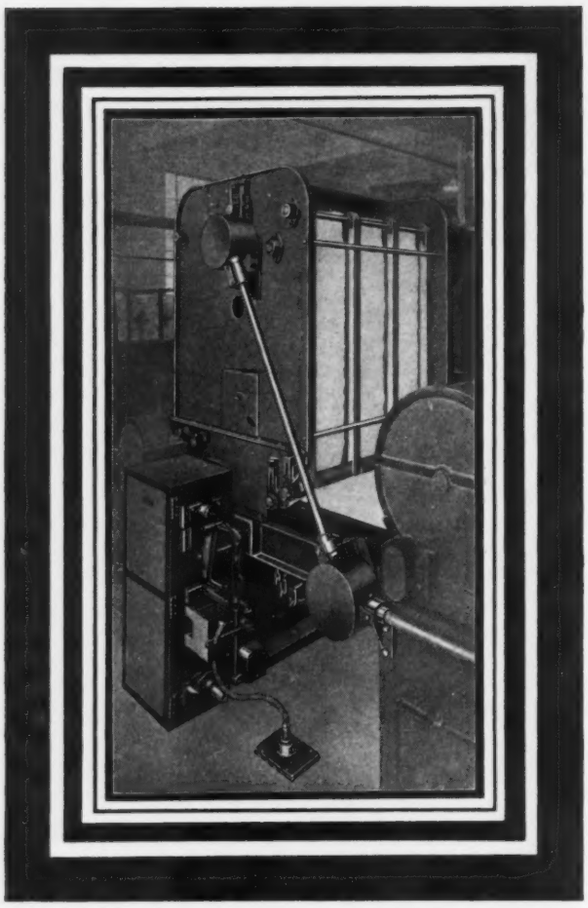
UNIVERSAL WINDING COMPANY

BOSTON

NEW YORK · PROVIDENCE · SPRINGFIELD · PHILADELPHIA · UTICA . CHARLOTTE · ATLANTA

·UNIVERSAL··· LEESONA ···WINDERS·

1716



A Complete Change-over

The Cleaning and Blending Reserve is an entirely complete change-over for hooking up existing breaker and finisher pickers, and at the same time adds a cleaning operation not accomplished with other change-overs.

A wholly new degree of cleanliness is made possible. The sheet of cotton which you see coming from the breaker, is uniformly picked over a set of grid bars above a dead air chamber. This gets rid of a surprising amount of light foreign material (equal in weight to the heavier particles removed by one beater of the picker line) which has always been present in the cleanest laps heretofore.

The cotton then drops into a reserve chamber whence it is fed to the finisher with utmost uniformity. "Since the Reserves have been added to the line (note—of already excellent one-process pickers) we have been able to reduce the yard per yard variation in weights very materially," states a Southern mill.

Driven from the breaker section, the Reserve puts no load whatever on the evener cone belt. In fact, the reserve actually reduces the cone load to substantially below that on a finisher picker, thus leaving the whole evener mechanism free to accurately even the finisher feed. SACO-LOWELL SHOPS, Boston · Charlotte · Greenville · Atlanta.

Saco–Lowell

Cleaning & Blending Reserve

for Pickers

Cone Winding Cotton Knitting Yarn

Cone winding, the final process in yarn mills and mercerizing plants making yarn for Knitting is the mills' most important process and if scientifically done, will assure satisfied Knitting customers.

Model 102 winding adds this value to a mill's product.

Two of the qualities Foster Model 102 cones have that are appreciated by Knitters are EVEN DENSITY always and SOFTNESS when necessary especially on mercerized yarns. These qualities make for even tension and even give-off of the yarn from the cone on the Knitting Machine and are reflected in the resulting high grade appearance of the Knitted fabric.

Foster Machine Company

WESTFIELD, MASSACHUSETTS

1859—75 YEARS OF SEWING PROGRESS—1934

WILLCOX & GIBBS
High-Speed
LOCKSTITCH

GUARANTEE

Willcox & Gibbs superiority is your guarantee of Willcox & Gibbs Machine performance. Every machine that bears the name of Willcox & Gibbs is a product of sound engineering principles and precision manufacture with a long record of improvements and betterments to their credit.

Willcox & Gibbs Machines can be bought with complete confidence that they will always represent sterling performance in the service to which they are applied.

Why not have a talk with one of our Sewing Specialists—he may show you several ways to cut costs—with a Willcox & Gibbs Machine. When may he call?

WILLCOX & GIBBS
SEWING MACHINE COMPANY

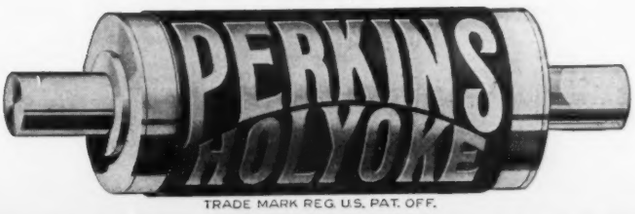
HOME OFFICES
656-658 BROADWAY, NEW YORK, N. Y.

New Willcox & Gibbs Machines and genuine Parts may be purchased only from company's offices

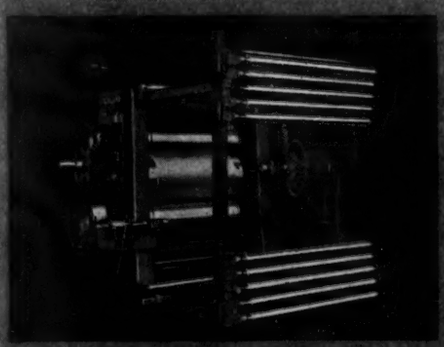
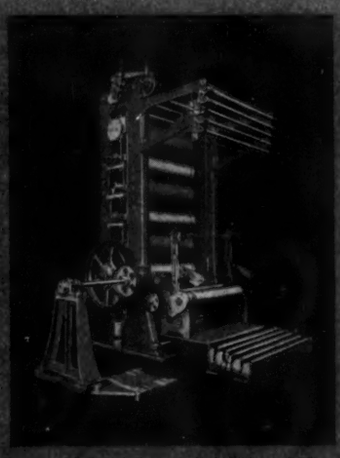
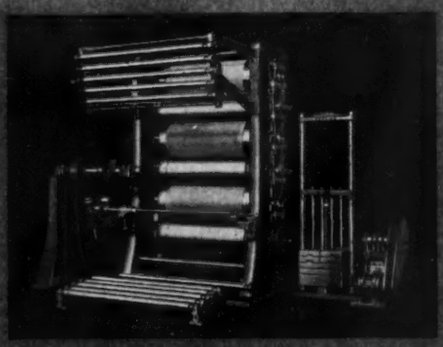
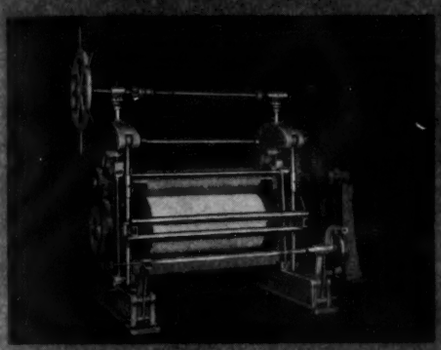
B. F. PERKINS & SON, Inc.

Established 1873

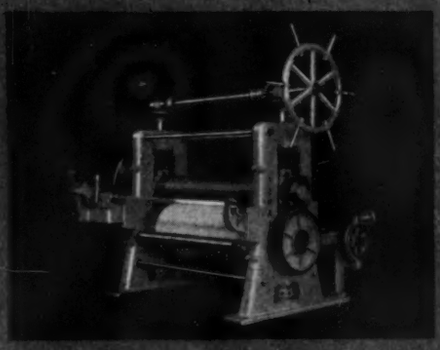
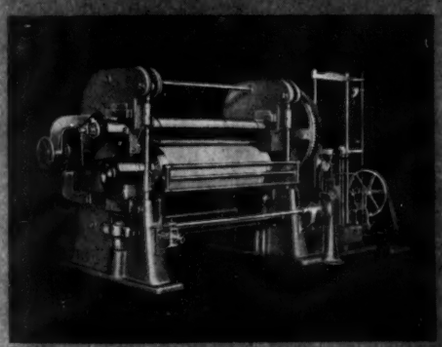
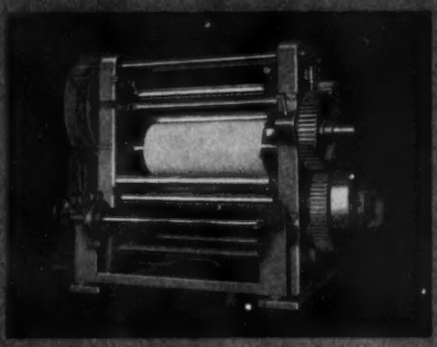
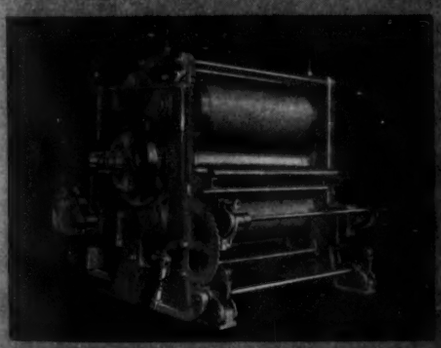
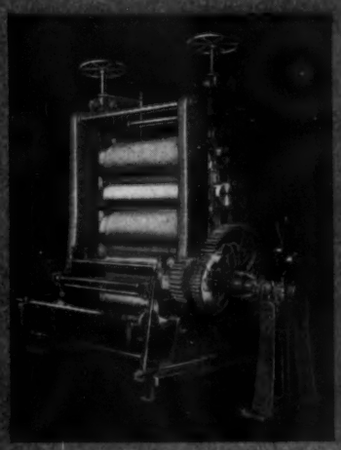
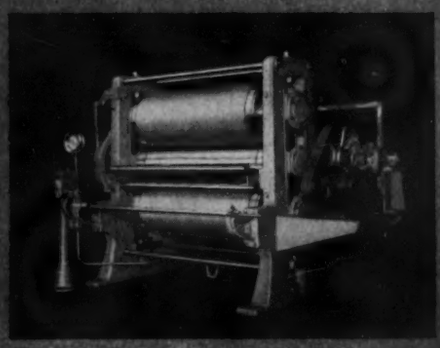
HOLYOKE, MASS.



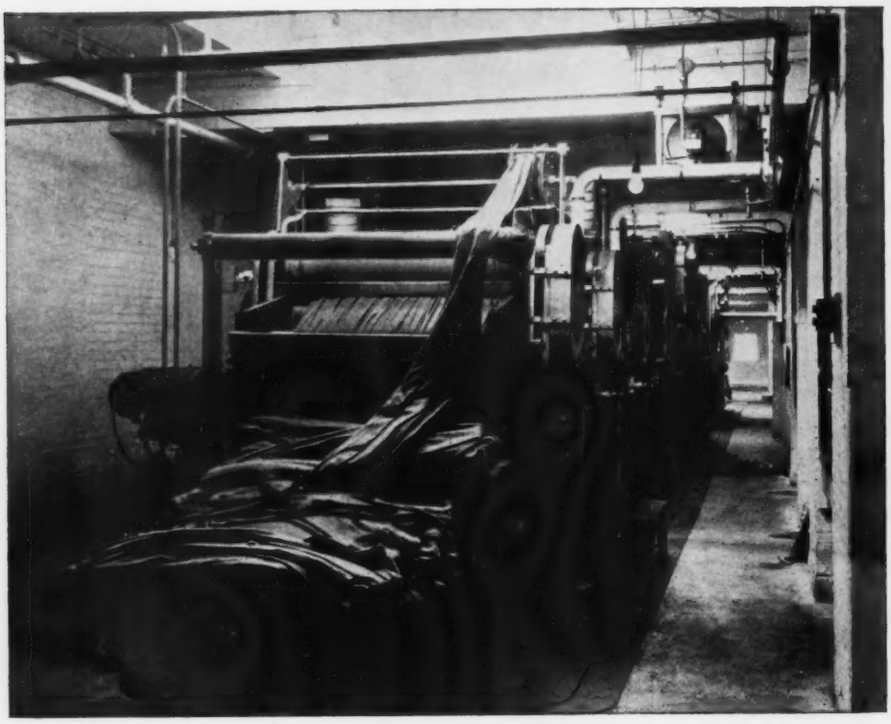
TRADE MARK REG. U.S. PAT. OFF.

NO CALENDER CAN BE BETTER THAN THE ROLLS IN IT

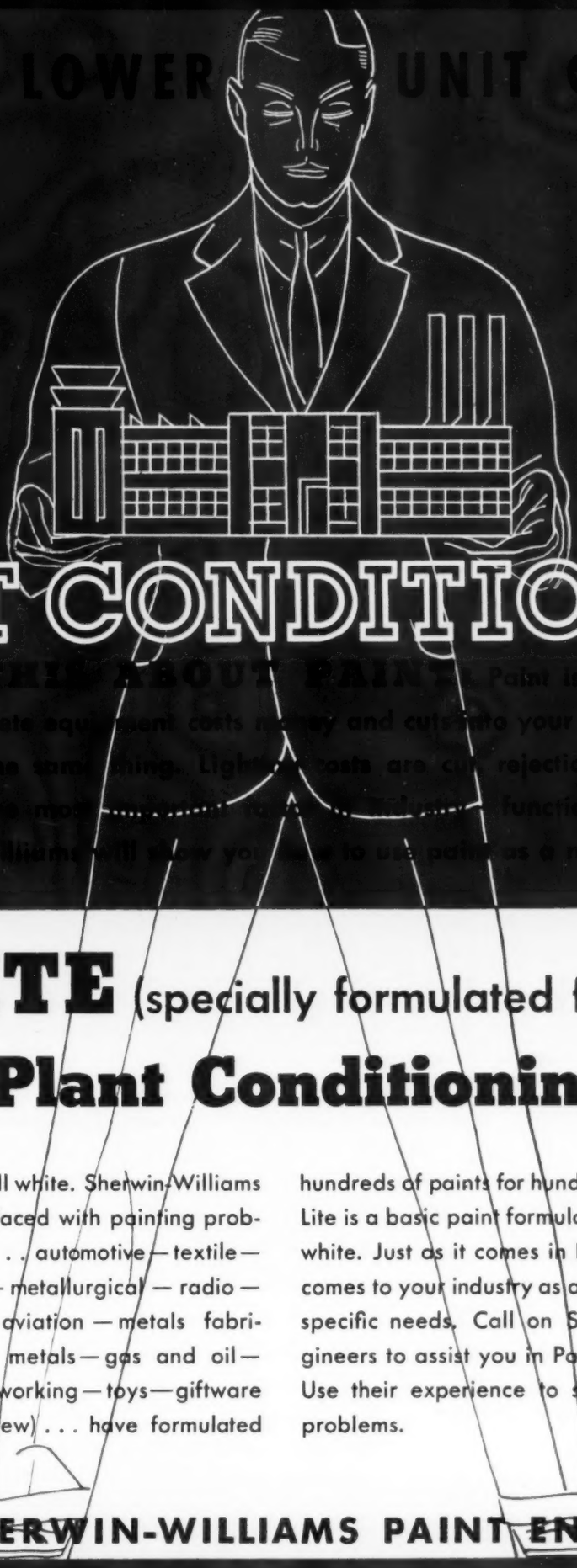
NEW and PROVED
CONTINUOUS SCOURING



This is the new Riggs & Lombard Continuous Washer scouring 32 oz. low grade meltons at 18 y. p. m.—with two men.

THERE are six Continuous Washers of this type now in everyday operation, giving results never before achieved. Enthusiastic reports prove that this machine is not an experiment but a development of great importance in economical production. Riggs & Lombard Continuous Washers have new, exclusive and patented features which insure successful operation. There is a size and capacity to suit all but the smallest mills. Write for complete information.

RIGGS AND LOMBARD
INCORPORATED
LOWELL, MASS.



TO LOWER UNIT COSTS

PLANT CONDITIONING

REMEMBER WHEN ABOUT PAINT? Paint is a tool as surely as your loom or your lathe. Obsolete equipment costs money and cuts into your profits. Obsolete painting and use of paint does the same thing. Light costs are cut, rejections are reduced, safety is enhanced, cooperation — the most important factor in production functions at its best in a well-painted plant. Sherwin-Williams will show you how to use paint as a main means to lower costs.

SAVE-LITE (specially formulated for your industry) is THE Plant Conditioning Paint

● There is no all-purpose mill white. Sherwin-Williams paint engineers, constantly faced with painting problems in various industries . . . automotive — textile — food — chemical — mining — metallurgical — radio — tobacco — transportation — aviation — metals fabrication — steel — non-ferrous metals — gas and oil — cosmetic — ceramic — wood-working — toys — giftware and novelties (to name a few) . . . have formulated hundreds of paints for hundreds of specific uses. Save-Lite is a basic paint formula for the best industrial mill white. Just as it comes in Eg-Shel, Gloss or Flat, so it comes to your industry as a special paint to meet your specific needs. Call on Sherwin-Williams Paint Engineers to assist you in Painting Your Way to Profits. Use their experience to solve your paint problems.

SEE THE SHERWIN-WILLIAMS PAINT ENGINEER

SHERWIN-WILLIAMS PAINTS

SAVE-LITE PLANT INTERIOR FINISHES

COVER THE EARTH

SHERWIN-WILLIAMS PAINTS

HIRAM WALKER

PEORIA, ILL.

All structural steel and iron work at the world's largest distillery, Hiram Walker's at Peoria, Ill., is protected with Sherwin-Williams Kromik Metal Primer and with Metalastic Field Coat. It's a huge job—it *must* be, to thoroughly protect a plant of such proportions. It covers 22 acres of ground, has a daily capacity of 100,000 gallons and a bottling capacity of 10,000 cases of quarts every 7-hour day. Much of the painting had to be carried on during adverse winter weather conditions, but thanks to the good paint and good painting (Val Jobst and Son were the contractors), an outstanding job was done. Some four thousand tons of structural steel, as well as 2,000 tons of plate employed in tank construction, were given a prime and finish coat. Both Hiram Walker and Sherwin-Williams are proud of the job.

FREE BOOKS

Check the Sherwin-Williams painting booklets most interesting to you. They will be promptly forwarded.

1 Plant Interiors.
2 Plant Exteriors.
3 Metal Protection.
4 Product Finishing—Metal.
5 Product Finishing—Wood.
6 Bus Finishing.
7 Truck Finishing.
8 Aluminum Paint.

Name.....

Company.....

Position.....

Address.....

PHILCO

PHILADELPHIA, PA.

A visit to the Philco Radio and Television Company's plant in Philadelphia is a visit to a beehive. Production is at higher levels than ever before. In the cabinet plant Sherwin-Williams lacquers are part and parcel of this beehive activity. Fillers, first coats, second coats, and soft transparent finishing lacquers are part of the preparation of the finished Philco that may grace your home. You would be amazed at the hand finishing that goes into each cabinet—amazed also at the speed and dispatch with which cabinets are turned out.

BETTER LIGHT BETTER SIGHT

NEW YORK CITY

On the authority of the Better Vision Institute, 85% of all we know comes to us through eyes. Our working and living depend upon them. How to aid them to the fullest? With light, enough light. How to get enough light? See that daylight and artificial light are reflected to the fullest extent. How to do this? As Beechnut Packing, Kendall Mills, Breyer's Ice Cream and other industrial leaders do it . . . by seeing that wall and ceiling surfaces are painted with Save-Lite Mill White.

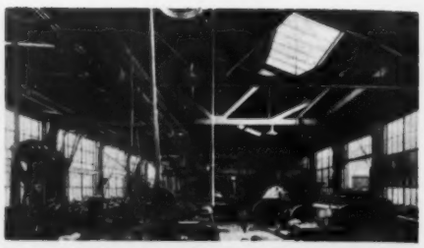
SAVE-LITE

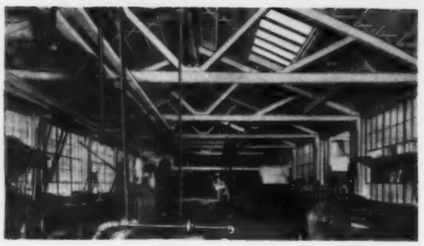
SAVE SIGHT

"Specially formulated for your industry." These five words cover a wealth of experience, research and production. You may have a fume resisting problem; a dust retention problem. You may need a paint that is heat resistant. In your industry a washable gloss may be vital; in someone else's an egg-shell combination of the properties of gloss and flat wall paints is equally necessary. Perhaps you don't know the proper paint for your application. The five words mentioned cover all of the years of The Sherwin-Williams Company's efforts on all paint problems. Breadth of experience means specific answers to your individual problems.

RAFTER

BELLEVILLE, N. J.





Saving light and sight with another Sherwin-Williams Save-Lite job. Rafter Machine Co., Belleville, N. J.

ANSWERS

1 White paint has the highest light reflection value—much higher than aluminum.

2 White paint also has a higher heat reflection value than any other. This means vital saving in gallonage losses of volatile liquids exposed to the sun's rays or other high heat sources.

3 The Mauretania, crack English liner, made heat tests on two Caribbean cruises. When the hull was painted white, the ship was ten degrees cooler than under ordinary dark colors.

4 Westinghouse Electric and Procter and Gamble put all maintenance painting on a time-study and production basis. The savings ran into thousands of dollars yearly.

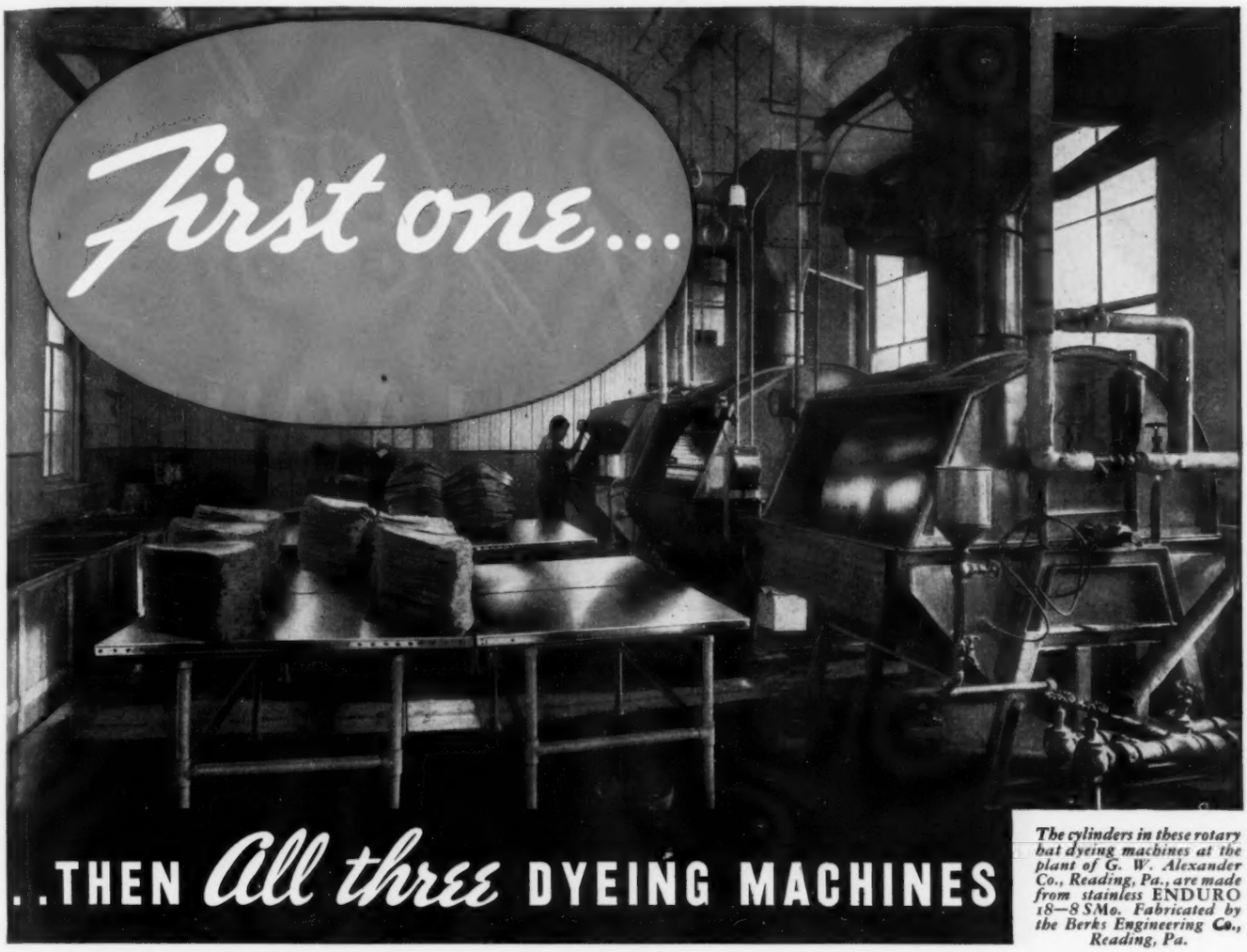
5 Watch color. It is going to be used to an ever-increasing extent in painting.

6 Be sure to know how to prepare a surface for paint as well as how to paint it. Sherwin-Williams paint engineers will give you good counsel in this regard.

THE SHERWIN-WILLIAMS CO.

ADMINISTRATION OFFICES: CLEVELAND, OHIO

Sales offices, factories and warehouses in principal cities



The cylinders in these rotary hat dyeing machines at the plant of G. W. Alexander Co., Reading, Pa., are made from stainless ENDURO *18—8 SMo. Fabricated by the Berks Engineering Co., Reading, Pa.*

..THEN *All three* DYEING MACHINES WERE EQUIPPED WITH CYLINDERS OF STAINLESS ENDURO

Here's more evidence that will interest every textile engineer having trouble with corrosion or discoloration in dye machines! • The engineers at the G. W. Alexander Co., Reading, Pa., installed a perforated cylinder made from stainless ENDURO in one of their machines sixteen months ago. It was watched carefully. After a full year of steady operation it was found to be in the same condition as the day installed. No corrosion . . . no discoloration. • Today, the three machines have ENDURO cylinders. And work tables have been installed, made from ENDURO, too. • ENDURO has proved its value in dyehouse service. The facts are available. Write Republic for full data.

ENDURO
REPUBLIC'S PERFECTED
STAINLESS STEEL
Licensed under Chemical Foundation Patents Nos. 1316817 and 1339378. ENDURO is sold only through Republic Sales Offices and Authorized Distributors

CENTRAL ALLOY DIVISION . . . MASSILLON, OHIO
REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

GOT A *Big Job* FOR A SMALL VALVE?

USE THESE VERSATILE CLAMP GATE VALVES

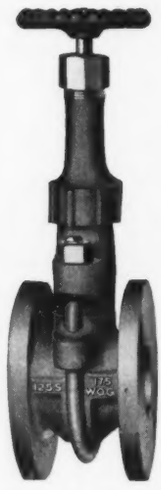
Sturdy . . Economical . . Compact . . You can find many new uses for these sturdy valves in small sizes

● These valves handle more *different* jobs than you would give them credit for at first glance and they are more compact, more reasonable in price than a valve of ordinary design. In all sizes, the replacement of one small part will provide a new thread bushing for the stem. This adds length of life, speeds repairs. All outside screw and yoke valves of this type have stem threads entirely *outside* the body, not subject to action of liquid or gas in the line. Crane Clamp Gate Valves come in a *complete line of small sizes*, either in screwed or flanged ends, and brass-mounted for general industrial use or all-iron construction for resistance to corrosion. Outside screw and yoke, inside screw, or quick-opening design.

COMPLETE IN SMALL SIZES FOR THESE APPLICATIONS:

Steam Lines	Cold Water Lines	Lubricating and Fuel Oil Lines
Hot Water Lines	Air Lines	Caustic Lines (All-Iron)

Crane Clamp Gate Valve No. 487½—Brass Mounted, Outside Screw and Yoke



Crane Clamp Gate Valve No. 490½—Brass Mounted, Inside Screw

Crane Clamp Gate Valve No. 490—Brass Mounted, Inside Screw

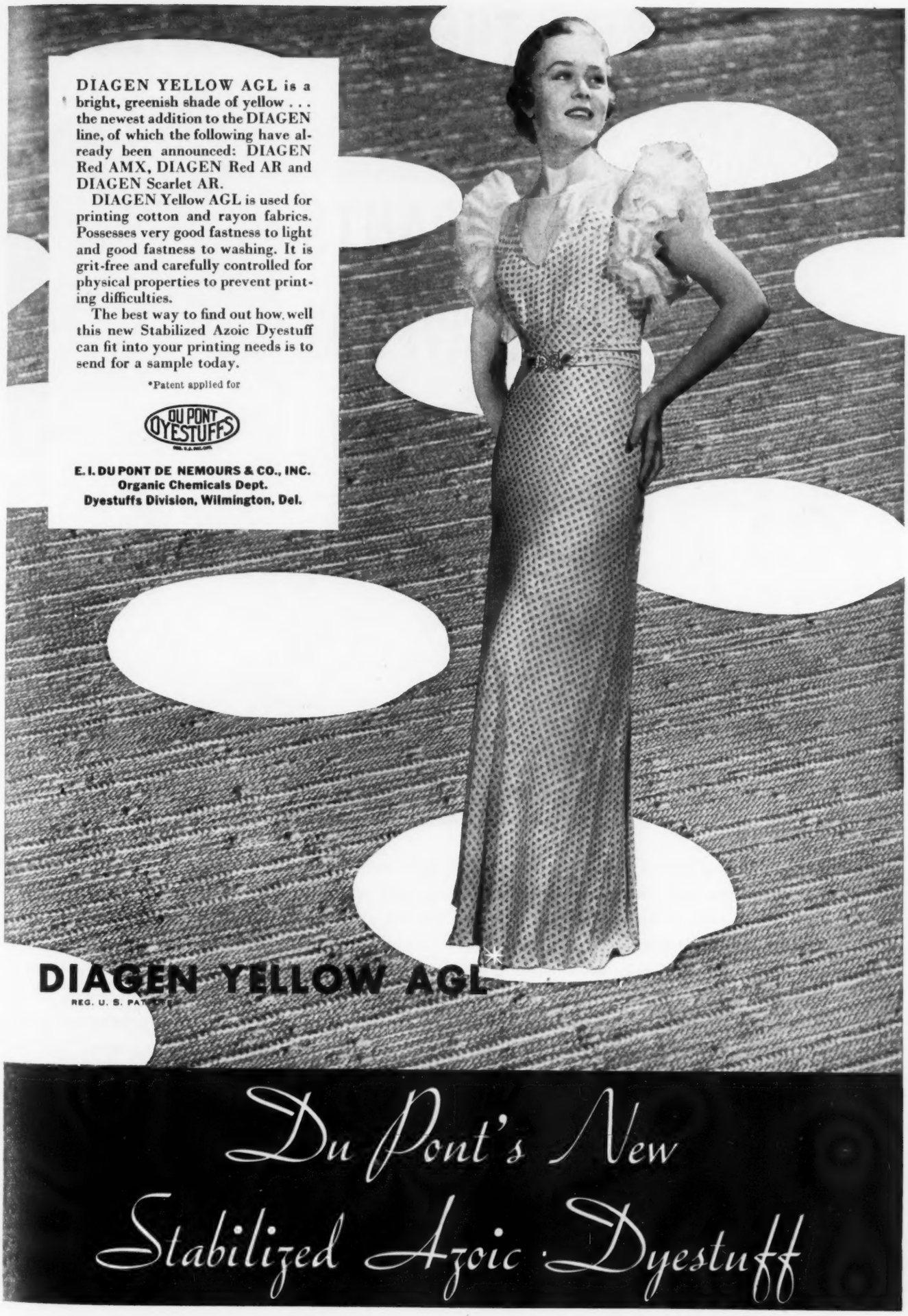
Crane Clamp Gate Valve No. 486½—Brass Mounted, Outside Screw and Yoke

CRANE

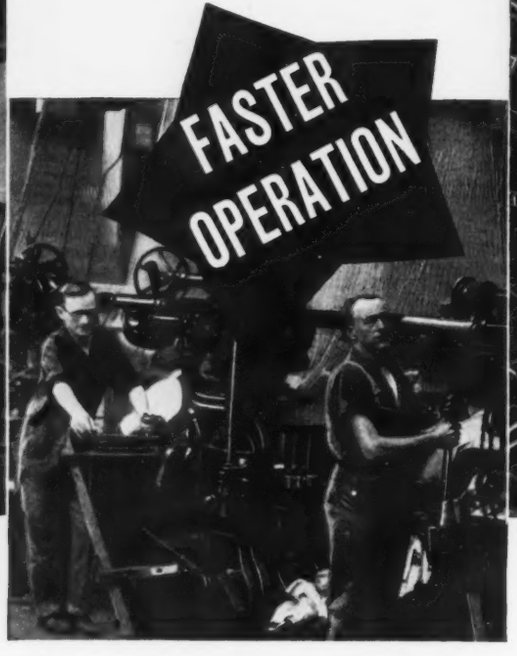
CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS

NEW YORK: 23 W. 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities


DIAGEN YELLOW AGL is a bright, greenish shade of yellow . . . the newest addition to the DIAGEN line, of which the following have already been announced: DIAGEN Red AMX, DIAGEN Red AR and DIAGEN Scarlet AR.
DIAGEN Yellow AGL is used for printing cotton and rayon fabrics. Possesses very good fastness to light and good fastness to washing. It is grit-free and carefully controlled for physical properties to prevent printing difficulties.
The best way to find out how well this new Stabilized Azoic Dyestuff can fit into your printing needs is to send for a sample today.
*Patent applied for
DU PONT DYESTUFFS
E. I. DU PONT DE NEMOURS & CO., INC.
Organic Chemicals Dept.
Dyestuffs Division, Wilmington, Del.
DIAGEN YELLOW AGL
REG. U. S. PAT. OFF.
Du Pont's New
Stabilized Azoic Dyestuff

THESE *tested* LUBRICANTS WILL GIVE YOU



Many textile mills have proved that Texaco can reduce the frictional drag that wastes power throughout the mill. Texaco *tested* Lubricants for power plant equipment are exceptionally high in quality, always uniform and economical to use because they are so long lived.

Cards, combs, spindles, twisters, looms and many other kinds of production machinery will throw oil or grease on the material in process if the lubricants are not right. Texaco *tested* Lubricants will not throw out. They are carefully applied to your own operating conditions.

New high speed machinery and the speeding up of old equipment are present day factors, in textile operations, with which Texaco has been closely connected. A talk with a Texaco Engineer may show you a greater efficiency from your production units. And at no increase in operating expenses.

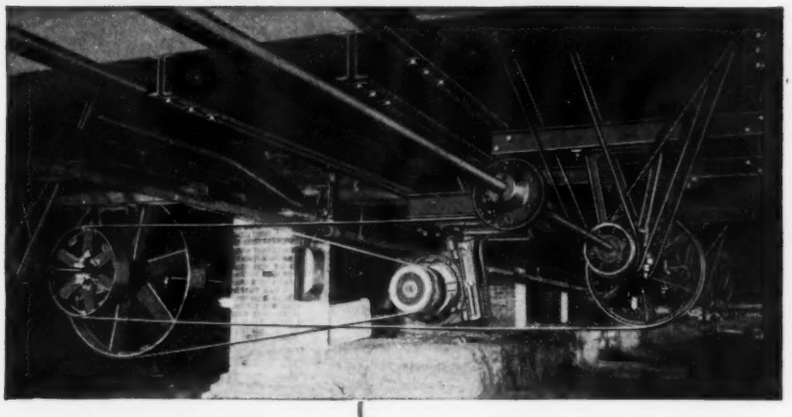
THE TEXAS COMPANY
135 East 42nd Street, New York City

TEXACO *tested* LUBRICANTS

"There is a Texaco tested Lubricant for every purpose"

GRATON & KNIGHT Engineers have produced an entirely NEW kind of belting . . . . . to match the economies of MODERN GROUP DRIVE

GRATON AND KNIGHT



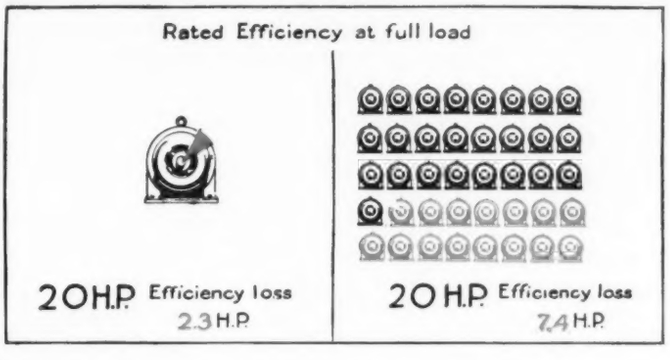
This Graton & Knight Research Flat Leather Belting assures the full benefits and economies of the Modern Group Drive. It has consistently averaged only ONE take-up to 3 or 4 take-ups for other leather belting under identical operating conditions. It has consistently carried full rated loads for weeks without any take-up at all and even then has required no further maintenance for a year or more, except occasional dressing.

Minimum stretch factor, greater flexibility, improved high friction surface have made this exceptional performance possible. Research Belting is built to fully meet modern requirements of higher speed, smaller pulley operation, shorter center distances. It insures sharply reduced maintenance cost and more economical power use.

As an essential part of the Modern Group Drive these important betterments in belt manufacture and performance safeguard your investment and assure the full benefits and economies of this new drive system.

Our local power transmission man knows this interesting story thoroughly. He can show you facts and carefully checked operating data to confirm every statement we have made. He can help you make definite savings NOW in your own plant. Write Graton & Knight Company, Worcester, Mass.

HIGHLIGHTS OF THE MODERN GROUP DRIVE



LARGER H.P. packages give you more for your money

This chart shows the efficiency losses in large and small motors of the same total horsepower, according to standard motor rating tables.

There are some drives in every plant where the advantages of the individual motor installation make these losses of slight importance. But where many machine units maintain steady production, the greater motor efficiency of Modern Group Drive represents a substantial saving.

This chart is taken from a booklet published by the Mechanical Power Engineering Associates, and giving in simple, non-technical form the results of a two-year study of modern group and unit drive systems in Industry. **We will be glad to send you a copy on request. Write us.**

Research Performance Facts tell their own story

The boss carder in a large carpet mill says he has never used a belt with "so high a coefficient of friction." His report was made after Research Belting showed exceptional performance on mule drives.

●

Research performance and freedom from stretch is equally characteristic of all size belts. During a year's operation in a well-known mill, the 3" Research Belts on spinning frame drives, 31 feet long, have been cut *only ONE INCH*.

●

Research eliminated "our old trouble of taking belts up" says a well-known hosiery company. A trial roll of Research installed in this plant showed less than one half of one per cent stretch.

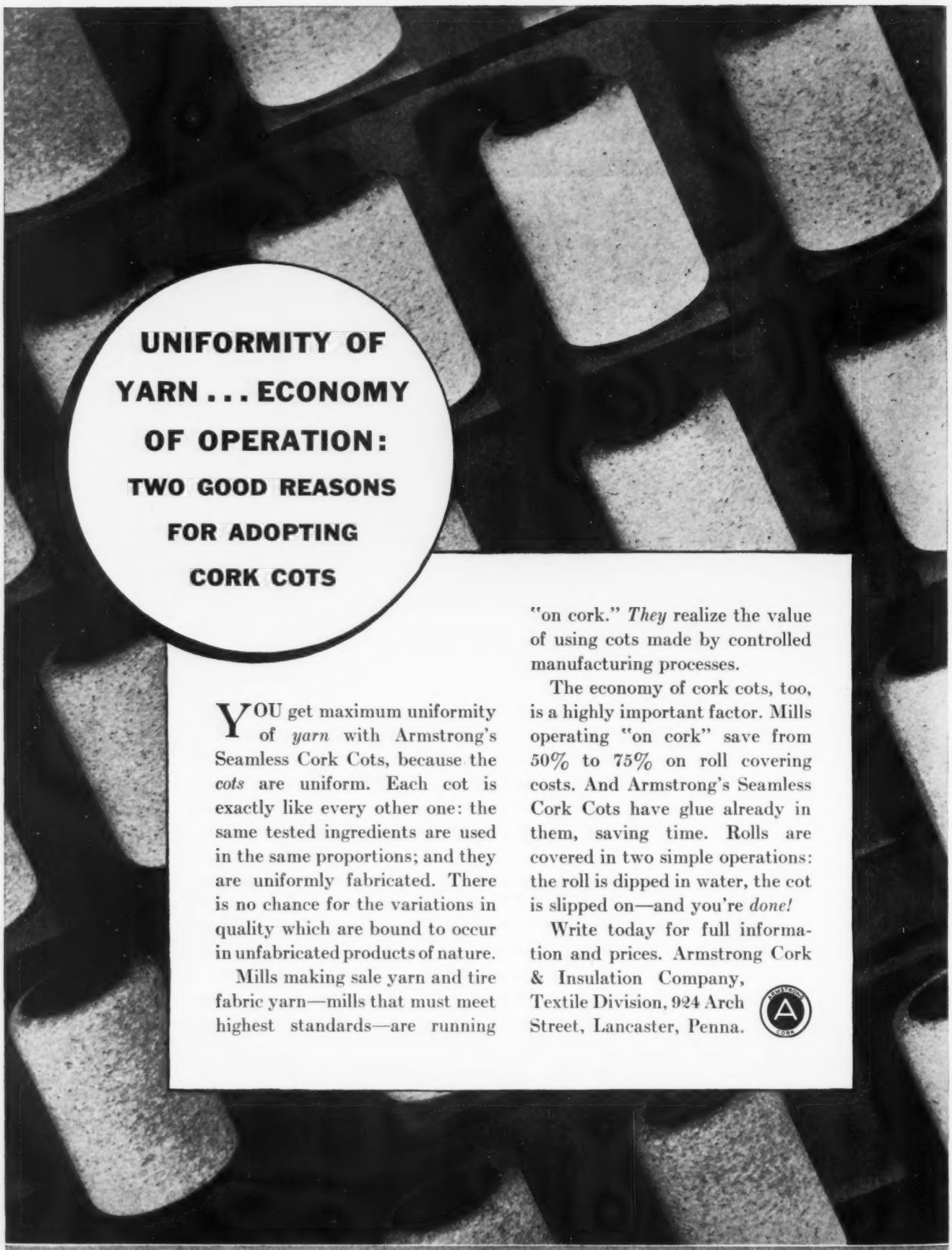
●

And here's the story of Research on an Atwood Spinner. Belt length 39 feet, endless. Belt width 1¾ inches. Research belting still going strong after 10 months service with less than 2% take-up during the first 8 months, *and none in the last two*. Previous best belt record was one year's service with one to three take-ups for a total of 16".

NRA

GRATON & KNIGHT Research LEATHER BELTING

GRATON & KNIGHT COMPANY . . . . . WORCESTER, MASS



UNIFORMITY OF YARN . . . ECONOMY OF OPERATION:

TWO GOOD REASONS FOR ADOPTING CORK COTS

YOU get maximum uniformity of *yarn* with Armstrong's Seamless Cork Cots, because the *cots* are uniform. Each cot is exactly like every other one: the same tested ingredients are used in the same proportions; and they are uniformly fabricated. There is no chance for the variations in quality which are bound to occur in unfabricated products of nature.

Mills making sale yarn and tire fabric yarn—mills that must meet highest standards—are running "on cork." *They* realize the value of using cots made by controlled manufacturing processes.

The economy of cork cots, too, is a highly important factor. Mills operating "on cork" save from 50% to 75% on roll covering costs. And Armstrong's Seamless Cork Cots have glue already in them, saving time. Rolls are covered in two simple operations: the roll is dipped in water, the cot is slipped on—and you're *done!*

Write today for full information and prices. Armstrong Cork & Insulation Company, Textile Division, 924 Arch Street, Lancaster, Penna.

Armstrong's Seamless Cork Cots

FOR SPINNING AND CARD ROOM ROLLS

ANNOUNCING!

The new
DURO-BRACE TEXSTEEL SHEAVES

The Allis-Chalmers Manufacturing Company, originators of multiple V belt drives, now offers a new development in sheaves which will withstand the severest duty. • Bending of the outside plate is practically impossible with the new Duro-Brace Sheaves, for in the new design this vulnerable area is braced by a reinforcing convex steel plate, which increases its strength to so great a degree as to eliminate distortion, even under extreme overloads; thus giving a true running drive always. • Duro-Brace Texsteel Drives are 98.9% efficient . . . Require no belt dressing or lubrication . . . Are unaffected by moisture or dust . . . Are Vibrationless, Slipless, Silent, Light and Clean. • Mail us a card asking for Bulletin No. 2188 which sets forth the advantages which Duro-Brace Texsteel Drives offer you in all matters of power transmission, whether they are simple or complex.

★★★

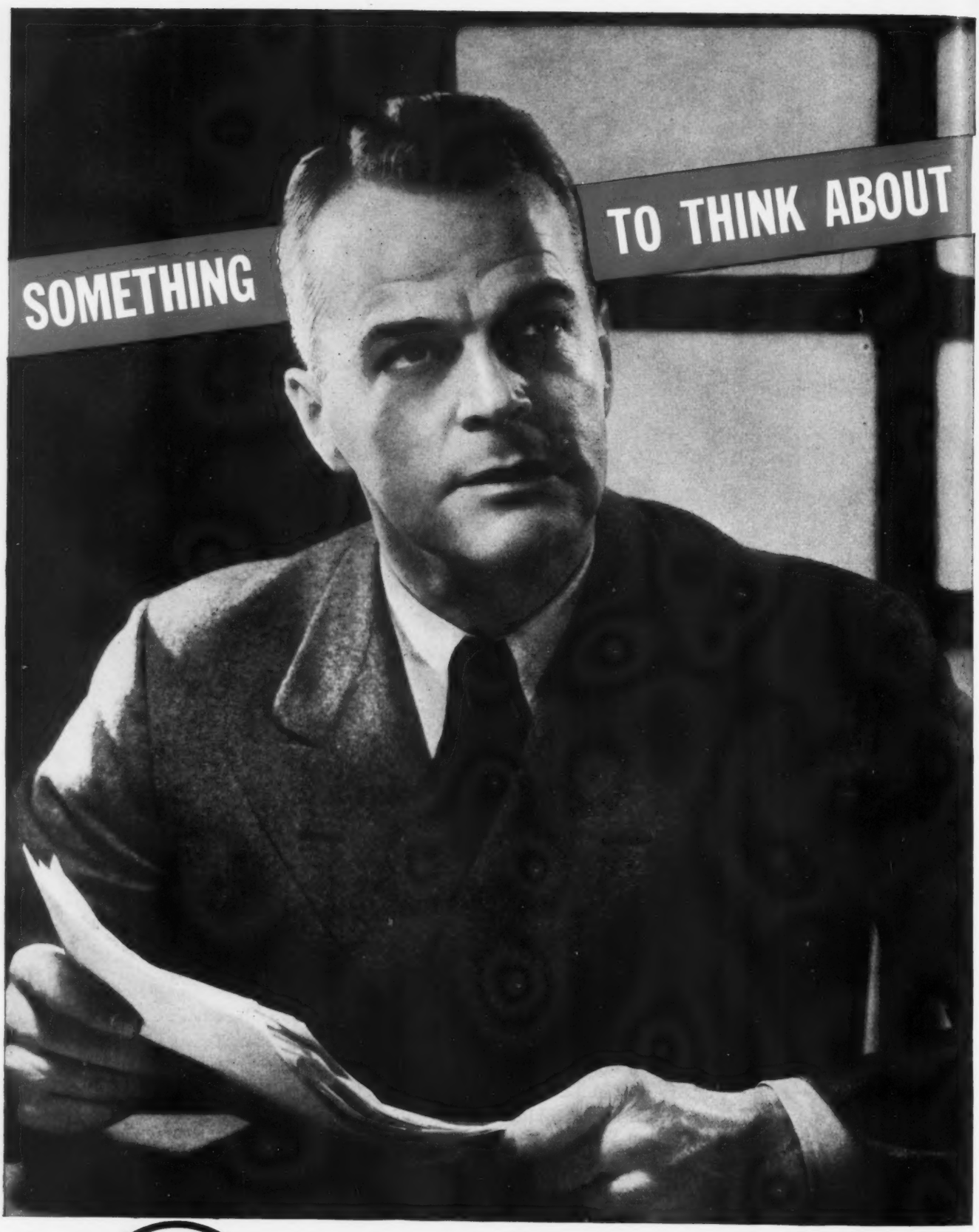
Former Design: cross-section showing unsupported outside plate.

New Duro-Brace Design: cross-section showing outside plate braced by a convex reinforcing steel plate.

TEXROPE DRIVES

ORIGINATED BY
ALLIS-CHALMERS MANUFACTURING

ALLIS-CHALMERS
COMPANY • MILWAUKEE, WISCONSIN


SOMETHING
TO THINK ABOUT
GARGOYLE
Lubricants
SOCONY-VACUUM
INCORP

Show a LUBRICATION PROFIT FOR 1935!

Savings in power... reduced maintenance... uninterrupted production... and less lubrication expense add up to a LUBRICATION PROFIT *for your plant*

CERTAINLY LUBRICATION PROFIT is worth the consideration of every plant executive who has any responsibility for the lubrication of his plant.

It is, for example, yielding $2,700 a year additional net income for a paper mill . . . $4,925 annually for a textile plant . . . $9,000 yearly in a rubber mill . . . $1,800 in a machine shop.

It frequently uncovers unsuspected possibilities for substantial savings in power . . . reductions in repair and maintenance . . . smoother production flow . . . lower cost of lubrication itself . . . in plants of every type.

These economies grow logically out of the methods, the knowledge and the facilities that Socony-Vacuum puts at the disposal of your plant staff. The fact that more new Socony-Vacuum customers than ever before are making use of them is but one definite indication of their effectiveness.

• • •

IF YOU BELIEVE that conditions this year warrant combing your business for every profit possibility, why not go into the lubrication profit idea with one of our lubrication engineers? Socony-Vacuum Oil Company, Inc., 26 Broadway, New York City.

OIL COMPANY
ORATED

STANDARD OIL COMPANY OF NEW YORK • VACUUM OIL COMPANY • WADHAMS OIL COMPANY • WHITE STAR REFINING COMPANY • LUBRITE REFINING CORPORATION • WHITE EAGLE OIL CORPORATION • MAGNOLIA PETROLEUM COMPANY • GENERAL PETROLEUM CORPORATION OF CALIFORNIA

AND *how* he *can* scramble them! You know what excessive heat and spotty humidity conditions can do to the quality of your product, your cost, and your profits!

But why put up with these handicaps? There is absolutely no need to. The Sturtevant Evaporative Cooling System has proved that.

This evaporative cooling system is designed specifically for mill purposes...and because of its flexibility can be adapted to the conditions peculiar to each individual mill. It usually consists of a centrally located spray type air washer and fan, and a system of correctly designed ducts through which properly humidified air is uniformly distributed to every desired part of the mill. Sometimes this system is supplemented by spray heads.

Through the use of the Sturtevant System, a uniform and desired regain is positively maintained in the various mill departments. "Wetting down" of machines and stock is absolutely eliminated. There is no need to open windows.

Many mills have already put in Sturtevant Evaporative Cooling Systems...and are highly pleased with the results. We'll gladly give you the facts about these installations.

For your convenience...the coupon below.

THE COOLING AND AIR CONDITIONING CORPORATION
Division of B. F. Sturtevant Company
HYDE PARK BOSTON, MASS.
Atlanta Camden Chicago Los Angeles New York

☐ Please mail Bulletin AC-101, "Industry Freed of Weather Hazards."
☐ Have your representative call. T.W. 12-34

*Name*_____ *Company*_____

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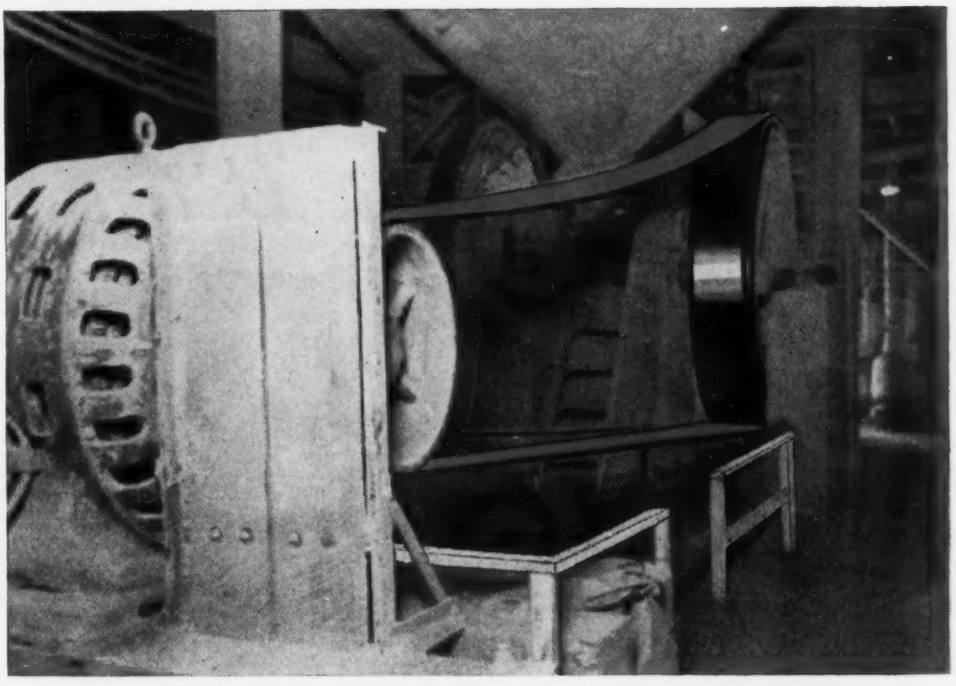
Sturtevant
REG. U.S. PAT. OFF.
Evaporative Cooling

PIONEERS IN EVAPORATIVE COOLING FOR TEXTILE MILLS

18" 8-ply Condor Compensated belt driving a tube mill—typical installation requiring belt dressing.



BELT DRESSING

used on

Condor Compensated BELT

PAT. APPLIED FOR

THE LOW TENSION RUBBER BELT WITH EQUALIZED PLY STRESSES OVER PULLEY

- **INCREASES OVERLOAD CAPACITY**
- **PROLONGS BELT LIFE**
- **RAISES RATED HORSEPOWER**

Condor LINE

V-Belt	Fire Hose
Flat Belt	Steam Hose
Air Hose	Suction Hose
Cone Belt	Molded Goods
Acid Hose	Oilless Bearings
Water Hose	Rubber Lined Tanks

Rubber Covered Rolls
Industrial Brake Blocks and Lining

On certain installations, due to heat, dust, excessive shock load, and other adverse operating conditions, transmission belts require periodic dressing to retain their highest efficiency . . . Condor Compensated Belt installed under such conditions may be dressed with absolute safety to the structure of the belt. Overload capacity rises, belt life and flexibility increases, and production per man hour holds uniformly to schedule . . . Condor Compensated is a proven general purpose belt. Due to its patented construction, fasteners hold 3 to 4 times longer and small pulleys may be used. On heavy duty drives, extra plies may be specified with the same pulleys. A trial will convince you.

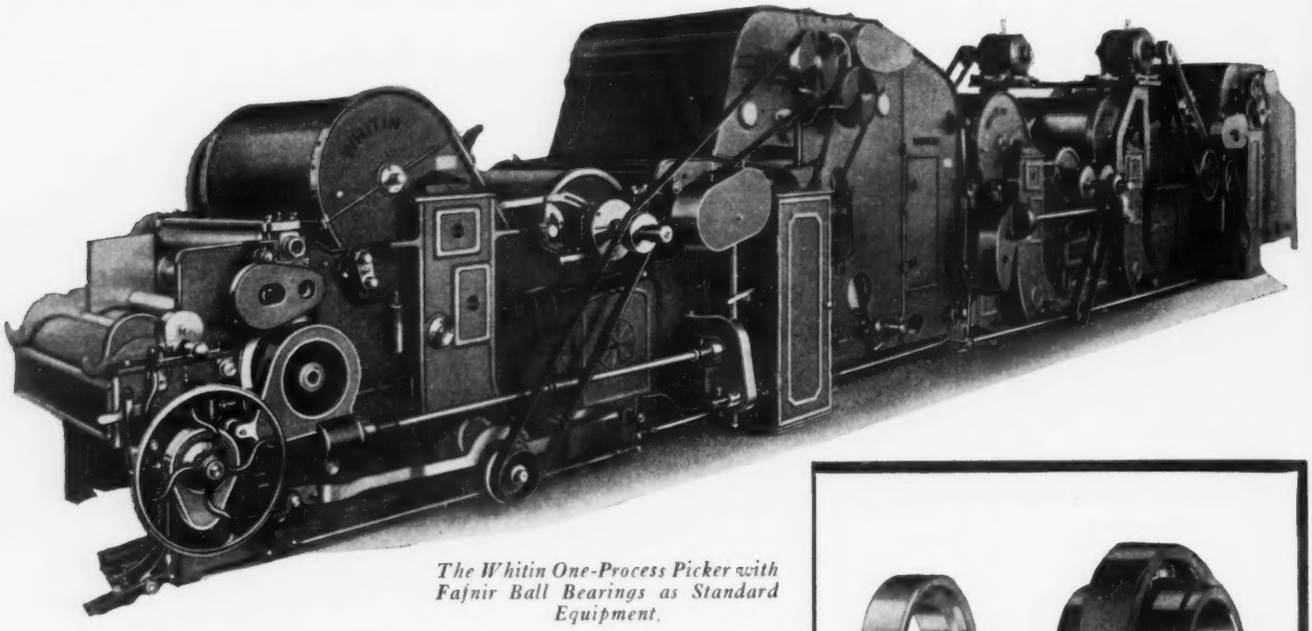
Sold by leading jobbers

THE MANHATTAN RUBBER MFG. DIVISION

OF RAYBESTOS-MANHATTAN, INC.

EXECUTIVE OFFICES AND FACTORIES, PASSAIC, NEW JERSEY

WHITIN ONE-PROCESS PICKER *picks* FAFNIR BALL BEARINGS

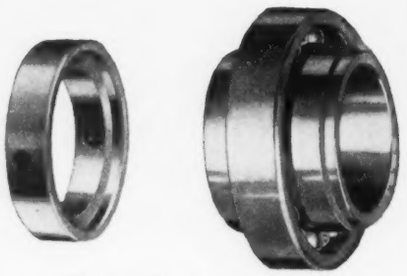


The Whitin One-Process Picker with Fafnir Ball Bearings as Standard Equipment.

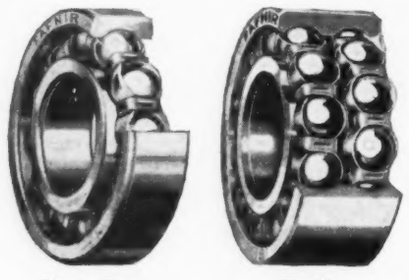
5 distinct types of Fafnirs are standard equipment on this Whitin machine. On the Beaters, Fans, Side Shafts, Feeder Pin Apron Shaft, Evener Cones, Swing Rakes, Helical Gear Housings and Drive Shafts you will find the ideal type of Fafnir Ball Bearings for each application. Single Row, Double Row, Thrust, Rigid Wide Inner Ring and Self-Aligning Wide Inner Ring Ball Bearing — each contributes dependable low-cost performance.

Whitin is one of the many Textile Machinery builders that know from their own experience and the experience of users, how truly efficient machines remain when equipped with Fafnir Ball Bearings. Such results are the product not only of the finest workmanship and design which characterize Fafnirs, but also the completeness of the line, assuring the ideal anti-friction bearing for each and every service.

To assure low-cost machine performance and to retain this over long periods of time, builders and users alike find that it pays to specify "Fafnir Ball Bearings." THE FAFNIR BEARING CO., *New Britain, Conn. Representatives also at*: Atlanta, Ga. . . . Houston, Tex. . . . Charlotte, N. C. . . . Boston, Mass. . . . Dallas, Tex. . . . Birmingham, Alabama.



Fafnir Wide Inner Ring with Sleeve-Locking Collar.



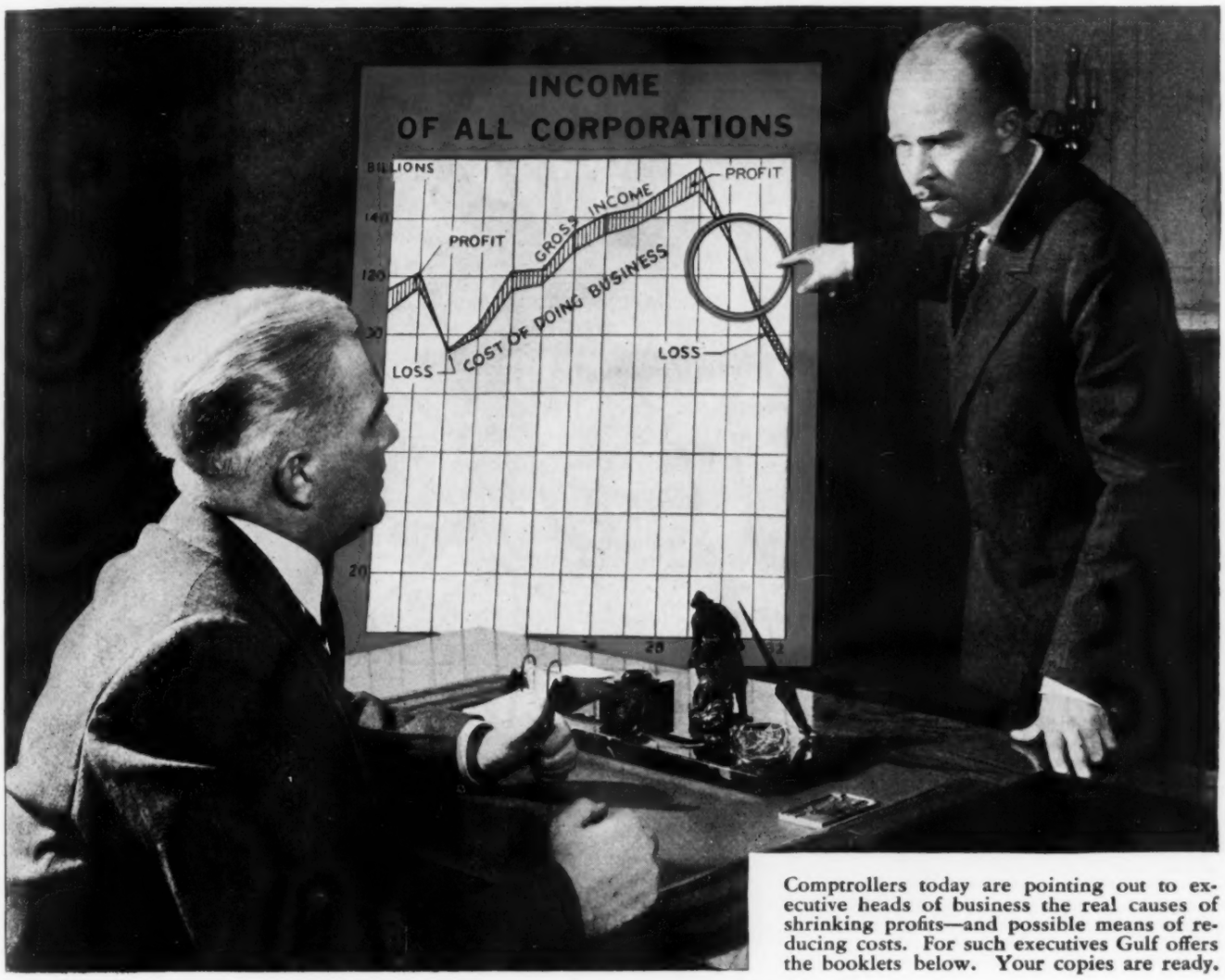
Single Row Radial

Double Row

Thrust Bearing

FAFNIR
BALL BEARINGS

"CONSEQUENTLY, OUR PROFITS ARE BEING SQUEEZED OUT . . . HERE"



Comptrollers today are pointing out to executive heads of business the real causes of shrinking profits—and possible means of reducing costs. For such executives Gulf offers the booklets below. Your copies are ready.

Many Executives are finding Gulf Lubrication an Immediate Avenue to Substantial Savings

INDUSTRY faces the most trying problem in its history today. Competition is holding prices *down.* Outside influences are putting manufacturing costs *up.* Profits are in the "squeeze"—and many plants are running "in the red."

How can industry meet this emergency? Without one cent of additional capital outlay, your plant can *definitely reduce operating expenses* by putting Gulf's modern lubrication plan to work. Gulf has designed a scientific cost-cutting plan which can be successfully applied to plants of all types. We suggest that you investigate this easy way of reducing maintenance costs.

WHAT EXECUTIVES SAY ABOUT GULF LUBRICATION

"Gulf lubricants give us minimum maintenance costs," says J. R. Dover, President, Dover Mills Co., Shelby, N. C.

"We get lower maintenance costs, fewer shut downs with Gulf" says V. L. Towner, President South Hills Ice Company, Pittsburgh, Pa.

GULF REFINING COMPANY · PITTSBURGH, PA.

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HAVE YOUR SECRETARY MAIL THIS COUPON—NOW!

GULF REFINING COMPANY T.W.-12
3800 Gulf Bldg., Pittsburgh, Pa.

Please send me the booklets "Gulf's 7-Point Plan for Industrial Lubrication" and "Lubrication Cost Recording."

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Title.....

Company.....

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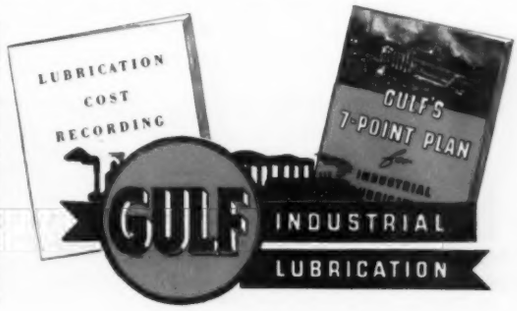

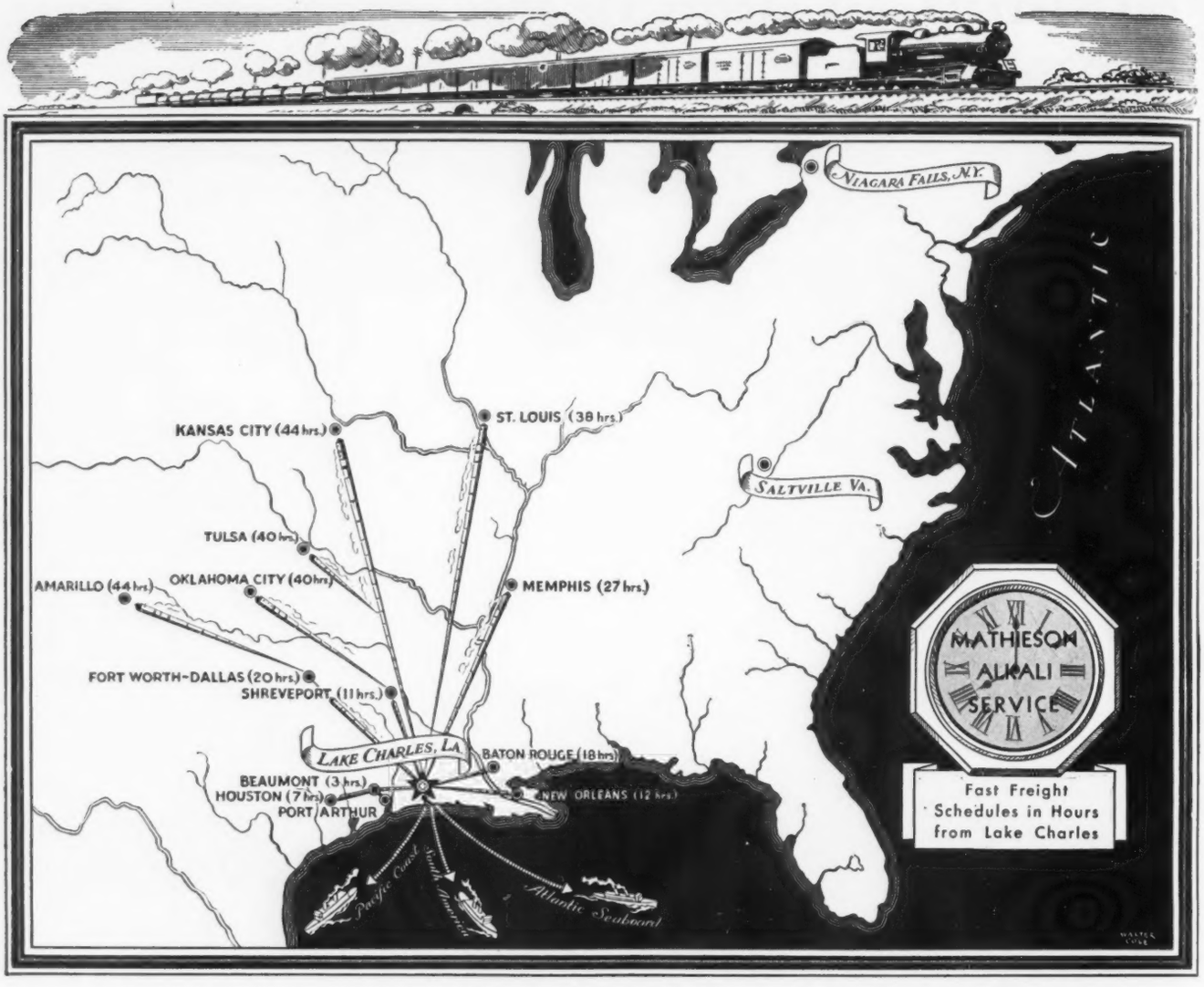

MATHIESON *SPEEDS UP*

Alkali Deliveries in the Southwest

CONSUMERS throughout the Southwest can now get deliveries of alkali in a matter of *hours!* Beginning this month, Mathieson's plant at Lake Charles, Louisiana, offers this fast delivery service.

Located at a virtual hub of transportation lines, this new source of supply speeds up alkali deliveries in the Southwest to a degree hitherto unknown. Radiating out of Lake Charles are the lines of three great railroad systems—the Southern Pacific, the Kansas City Southern and the Missouri Pacific. The fast freight schedules from Lake Charles, maintained by these carriers, permit timing of deliveries in *hours* rather than days, even to points as far north as St. Louis and Kansas City.

In addition to speedy rail delivery service, the new Lake Charles Plant offers substantial savings in transportation costs both by rail and by water to consumers in the South and Southwest, and by water to points on the Atlantic and Pacific seaboard, along the Gulf Coast, and on inland waterways including the Mississippi River and its tributaries. Water shipments are loaded on steamers and on barges at our own plant docks at Lake Charles.

We shall be glad to discuss with consumers the advantages of Lake Charles as a source of supply of alkali—in carloads, trainloads or shiploads.

Mathieson Chemicals

© THE MATHIESON ALKALI WORKS (INC.) . . . 250 PARK AVENUE, NEW YORK, N. Y.